

BASELINE SURVEY: PHASE VII

SAMBALPUR DISTRICT

Special Program for Promotion of Millets in Odisha
(Shree Anna Abhiyan)



Submitted to
Directorate of Agriculture and Food Production,
Government Of Odisha
2025



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Nabakrushna Choudhury Centre for Development Studies
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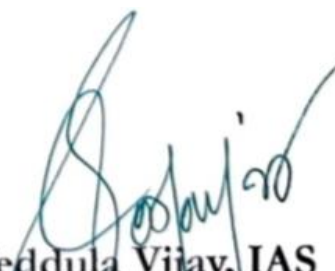
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FOREWORD

Sustainable Development Goal 2 seeks to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture. Millets offer a promising solution to help accomplish these objectives. The Shree Anna Abhiyan (SAA) is a great initiative of Odisha government that shows the state's commitment to reviving the cultivation of millets that are not only climate-resilient but has significant implications on health and nutrition of people. The programme has brought different stakeholders to work together to reinstate the significance of millets in Odisha's agricultural landscape. I am delighted to have the opportunity to write this foreword for the 'Special Programme for Promotion of Millets in Odisha.'

The SAA programme has emerged from a consultation with diverse array of stakeholders including NCDS. A memorandum of understanding (MoU) was signed on February 27, 2017, bringing together key stakeholders including the Directorate of Agriculture and Food Production (DAFP), NCDS, and the Watershed Support Services and Activities Network (WASSAN). This MoU delineated the framework for concerted efforts towards implementing the SAA, with NCDS assuming the pivotal role of anchoring the research secretariat. NCDS embarked on a comprehensive survey initiative encompassing Baseline, Midterm, and End-line assessments in the designated blocks of the SAA. These surveys, designed to provide a situational analysis of the status of millet production, marketing, consumption, represent a critical step towards informed intervention and strategic decision-making. The findings of the baseline survey presented in the report would provide a situational analysis of the current status of the millet at the time of survey and a reference point to analyse the impact of intervention.

As the Director, I commend all the dedicated team members of NCDS for their unwavering commitment and tireless efforts in achieving the objectives of the SAA. Your hard work and perseverance have played a crucial role in turning our shared vision into reality. I also extend my heartfelt gratitude to our partners, stakeholders, and collaborators for their invaluable support and steadfast dedication in this direction.



Dr. Yeddula Vijay, IAS
Director, NCDS

ACKNOWLEDGEMENT

It gives me immense pleasure to extend my heartfelt gratitude to all those who contributed to the successful completion of the “Baseline Survey Report of Phase VII, 2023”. This endeavour was truly a collaborative effort, and I am deeply grateful for the unwavering support and dedication demonstrated by each individual and organization involved. First and foremost, I would like to express my sincere appreciation to the research team of Nabakrushna Choudhury Centre for Development Studies (NCDS), Bhubaneswar, for spearheading the preparation of this report. Your commitments to excellence and tireless efforts have been instrumental in ensuring the quality and accuracy of the findings presented.

I extend my heartfelt thanks to the related government departments, organizations, and stakeholders, including farmers' associations, whose invaluable support and cooperation played a pivotal role in the successful completion of this study. Special mention goes to Dr. Arabinda Kumar Padhee, Principal Secretary to the Government, Department of Agriculture & Farmers' Empowerment (DA&FE), Mr. Prem Chandra Choudhury, Director of Agriculture DA&FE, and the Joint Director of Agriculture for their invaluable contributions.

I would like to extend my sincere appreciation to our esteemed Director, Dr. Yeddula Vijay (IAS) Additional Secretary to the Government, Planning and Convergence Department, Government of Odisha, and Director of Nabakrushna Choudhury Centre for Development Studies (NCDS). Your guidance, wisdom, and valuable suggestions have been invaluable in shaping the direction of this study. Many thanks to NCDS administration for their continuous support for smooth functioning of the research work. I also wish to acknowledge the contributions of Dr. Biswabas Patra and Dr. (Ms.) Rashmi Misra for their valuable insights and assistance.

I would also like to express my appreciation to the members of the Programme Secretariat (Watershed Support Services and Activities Network, WASSAN), particularly Mr. Dinesh Balam, Programme Secretariat, and the facilitating agencies and staff of the concerned areas under study for their support and cooperation. I am particularly grateful to Mr. Sushil Kumar Senapati, Ms. Kalpana Pradhan and Mr. Bikash Pradhan, along with the dedicated staffs of the State Project Monitoring Unit (SPMU), for their unwavering support and assistance throughout the duration of this project.

My sincere gratitude goes out to the Chief District Agricultural Officer (CDAO) of Sambalpur district, the Scheme Officer, District Programme Coordinator, Block Coordinators, and other block-level officials for their invaluable support in providing crucial information. Once again, thank you all for your invaluable contributions, dedication, and support. It has been a privilege to work alongside each of you, and I look forward to continued collaboration in our future endeavours. I extend my best wishes for the success of the publication.

Dr. Sandhya R Mahapatro
Project Director

EXECUTIVE SUMMARY

Sambalpur district is one of the 17 districts where the “Special Programme for the Promotion of Millets in Odisha or (hereafter) Shree Anna Abhiyan (SAA)” Phase VII has begun in the Kharif 2022. In Sambalpur district, 2801 target households are identified for the programme. Out of these, the Baseline study covered 480 households as sample. The survey revealed that among the surveyed households, 53.33 per cent belonged to ST category, 41.25 per cent belonged to Other Backward Class (OBC)/ Socially and Educationally Backward Class (SEBC), 4.79 per cent belonged to SC category and another 0.63 per cent belong to general category. The total population of the surveyed households is 2124, out of which 53.15 per cent are male and 46.85 per cent are female with 84.58 per cent belonging to Hindu religion.

Out of 480 sample households, 93.33 per cent possess Ration Cards. Moreover, out of the total a significant portion of the population, 20.53 per cent, are farmers, followed by housewife (17.8 per cent). The share of wage laborers is 10.92 per cent, while business owners account for 5.79 per cent and private employees 3.86 per cent. Student comprises 26.55 per cent, about 3.3 per cent of the sample population in the working age group is found to be unemployed. As far as their types of houses are concerned, out of the total 480 households, 31.88 per cent have *Semi-Pucca*, 40.21 per cent have *Kutcha*, and 27.92 per cent have *Pucca* houses. In addition to that it was also found that out of total population, 86.02 per cent found to be literate.

It is also revealed that about 31.46 per cent HHs having small land ownership, 54.38 per cent were having marginal landownership, 7.5 per cent HHs are medium land ownership and 3.75 per cent are landless whereas 2.92 per cent were having more than 10 acres of land. Only 4.38 per cent HHs have their income above 2 Lakh whereas the majority of household (53.96 per cent) were having annual income between Rs.40000/- to Rs.80000/-.

It is also observed that 16 sample households (3.3 per cent) have cultivated millets in the year 2022 covering total operational area 6.8 acres with an average yield of 2.35 quintals per acre and total millets production of 16 quintals. As far as the use their own seed is concerned, more than 90 per cent sample HHs reported of using their own but quality seeds. It is also observed that the most common method of millets cultivation among the sample households is broadcasting (43.75 per cent), followed by the LT methods (25 per cent), then SMI method is used by 18.75 per cent and LS method is used by 12.5 per cent. Moreover, all millet cultivating HHs adopted mono cropping and nearly all millets cultivating sample HHs shared that they store seeds in Jute bag and only 6 per cent HHs got their seed damaged in the process. As revealed in the Baseline Survey that the major reason for not cultivating millets is it's not profitable and even not comfortable in its processing.

It is also found that consumption of millets is highest during the summer season (87 per cent), while one-fourth of total samples HHs consume millets during the rainy and winter season. The data indicates that the majority of people consume millets during their lunch time (60.58 per cent) followed by breakfast (37.5 per cent). In addition to that it is also found that more than 80 per cent of the sample HHs consume millets by purchasing from outside. *Jau/Torani* is the popular recipe among the surveyed households as more than half of them are found to be consuming this recipe. The other popular recipes are *Tampo/Pitha and Khiri*. Around 5.8 per cent sample HHs purchased millet-based items and it is the highest in Jujumura block (12 per cent).

As per the base line survey, all the households process millets using machinery. Out of the total sample HHs only two sell their millets to the middlemen. Moreover, the study finding provides an in-depth analysis of the current situation in the selected villages and serves as a reference point to measure the progress made during the implementation of various development interventions including millet mission in the future. It also highlights the gaps and challenges in the existing system and infrastructure. It provides recommendations for improving the overall development indicators of the region.

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ABBREVIATIONS

APL	: Above Poverty Line
BPL	: Below Poverty Line
CBO	: Community Based Organization
CRP	: Community Resource Person
FGD	: Focused Group Discussion
FPO	: Farmer Producers Organization
HA	: Hectare
HHs	: Households
ICDS	: Integrated Child Development Scheme
LS	: Line Sowing
LT	: Line Transplant
ITDA	: Integrated Tribal Development Agency
MDM	: Mid-Day Meal
MFP	: Minor Forest Produce
MSP	: Minimum Support Prices
NAL	: Non-Agricultural Labour
NCDS	: Nabakrushna Choudhury Centre for Development Studies
NSSO	: National Sample Survey Organisation
OBC	: Other Backward Classes
SAA	: Shree Anna Abhiyan
PDS	: Public Distribution System
Qtl	: Quintal
SC	: Scheduled Caste
SMI	: System Millet Intensification
ST	: Scheduled Tribe
WASSAN	: Watershed Support Services and Activities Network

Chapter I

INTRODUCTION

1.1 Background

Millets have been a staple food for millions of people in India for centuries, especially in the central tribal belts. They are drought-resistant, highly nutritious, and can be cultivated in a wide range of soil and climatic conditions. Millets are also low in Glycaemic Index and gluten-free, making them an ideal choice for people with various health conditions. In recent times, there has been a renewed interest in millets cultivation due to its numerous health benefits and its potential to address food security challenges in the country. The Government of India has been promoting the cultivation of millets as part of its efforts to increase farmers' incomes, reduce dependence on water-intensive crops like rice, and promote sustainable agriculture. In this context, it is essential to understand the significance of millets cultivation and its associated challenges and opportunities.

Millets are cereal grain belongs to the Poaceae family, commonly known as the grass family. Millets are small, round whole grain grown in India, Nigeria, and other Asian and African countries. It is considered an ancient grain, used both for human consumption and livestock and bird feed. Millets have multiple advantages over other crops, including drought and pest resistance. It's also able to survive in harsh environments and less fertile soil. These benefits stem from its genetic composition and physical structure for example, its small size and hardness. This crop is also divided into two categories; major and minor millets, with major millets being the most popular or commonly cultivated varieties. Major millets include: Pearl, Foxtail, Proso (white), Finger Millet (Ragi); Minor millets include: Kodo, barnyard, little, Guinea, brown top, Fonio, Adlay (Job's tears). Like most cereals, millet is a starchy grain meaning that it's rich in carbs. Notably, it also packs several vitamins and minerals. Therefore, it may offer multiple health benefits.

The United Nations designating 2023 as the International Year of Millets, it gets further attentions of general public including the farmers. In the Indian state of Odisha, millets have always been an integral part of the traditional diet and have been cultivated for centuries, primarily among the tribal population. However, during last couple of decades, the popularity of millets has declined due to the increasing adoption of modern food habits and the promotion of high-yielding crops like rice and wheat. This shift has led to a decline in soil fertility and an increased vulnerability to climate change. To address these challenges, the Government of Odisha has launched several initiatives to promote the cultivation of millets, including "The Special Programme for Promotion of Millets in Odisha now known as Shree Anna Abhiyan (SAA) with a novel organizational structure was initiated by the Government of Odisha in 2017-18 emphasizing production, consumption, processing, and marketing of millets. The program aims to increase production, consumption, processing, and marketing of millets in Odisha, where they have been a staple food for generations. In this context, it is crucial to understand the significance of millets cultivation in Odisha and its potential to promote sustainable agriculture and improve food security. Among other Millets found in Odisha, Mandia constitutes a significant share of about 95 per cent.

This program tried to revive these nutrient-rich millets in the agricultural landscape, which were fading away in many parts of Odisha prior to its launching in 2017-18 by the Government of Odisha. The program had a unique structure that emphasized cultivating traditional millets such as Ragi, Gurji, Kosla (Small Millets), Kodo, Kangu (foxtail millet), and Jowars, which were forest dwellers' age-old foods. This initiative gave millet crops the much-needed attention they deserved and revived their growth across the state. In 2023, the implementation of SAA, Phase VII began in 17 districts, including Sambalpur, and this Baseline study aims to provide information on the program's various dimensions in the district. The profile of the Sambalpur district is presented below.

1.2 District Profile

The Sambalpur District is the western part of state of Odisha. The District is surrounded by Deogarh District in the East, Bargarh Districts in the West, Jharsuguda District in the North and Sonepur and Angul Districts in the South. The District has a history full of events including Indian freedom struggle representing the different section of the society. Sambalpur is mentioned in the book of Ptolemy as Sambalaka on the river Manada. Sambalpur District was subsequently divided into four separate Districts. Bargarh District was separated in 1993, and Jharsuguda and Deogarh Districts were separated in 1994.

1.2.1 Geography and Climate

The District covering a geographical area of 6702sqkm lies between 20 degrees 40' to 22 degrees 11' North Latitude and 82 degrees 39' to 85 degrees 15' East Longitude. Total population of the District as per 2011 census is 10,41,099. Total male population of the District is 5,26,877 whereas total female population is 5,14,222. The district has total 1,91,827 SC population and 3,55,261 ST population. Sambalpur district experiences extreme type of climate. Most of the rainfall is confined to the months from June to October visited by southwest monsoon. Mercury rises up to 47 degree centigrade during the month of May with intolerable heat wave and falls as low as 11.8 degree during December with extreme cold. In the district, the rainfall is highly uneven and irregular.

1.2.2 Economy

The economy of Sambalpur District is basically dependent on agriculture. Kendu leaf (*Diospyros Melanoxylon*) is also produced in Sambalpur. Tendu leaf is one of the most important non-wood forest products of Sambalpur and is also called as green gold of Odisha. Lately industrialization has started in the district and the prime industries of power, alumina and steel have been established. The place is famous for its globally renowned textile bounded patterns and fabrics locally known as Bandha. Sambalpur is famous for its Hand loom textile works, popularly known as Sambalpur Textile. It has earned international fame for its unique pattern, design and texture. Apart from textiles, Sambalpur has a rich tribal heritage and fabulous forestlands.

1.2.3 Population

The district has an area of 6702 Sq Km with 10.41 Lakhs of population (2011 Census). The district accounts for 2.23 per cent of the State's territory and shares 4.05 per cent of the State's population. The density of

population of the district is 488 per Sq Kms as against 270 persons per Sq Km of the State.

1.2.4 Administrative Structure

As per the administration of the District is concerned, Sambalpur has three sub-divisions namely Sambalpur, Kuchinda and Rairakhol. There are 9 Tehsils, 9 Blocks, 24 Police Stations, 1349 Revenue Villages and 138 Gram Panchayats functioning in the District.

Fig 1.1: Map of Sambalpur District



Source: <https://gisodisha.nic.in/Block/SAMBALPUR.pdf>

Table 1.1: Socio-economic and Demographic Features of Sambalpur District	
Indicator	Values
Census 2011	
Population	1,041,099
Males	526,877
Females	514,222
Scheduled caste	191827
Scheduled Tribe	355261
HHs	249597
Sex Ratio	976
Total Workers	505840
Main Workers	336854
Marginal Workers	168986
Non-Workers	535259
Cultivator	86800
Agricultural Laborers	160798
Literacy rate (%)	76.2
Total Geographical area(sq.km)	6624
Land Use Pattern (Area in '000ha) (2014-15)	
Forest	106362
Gross Cropped area	267.85
Cultivable area	1,93,674
Permanent Pasture and Other grazing Land	22001
Net Area Sown	116501
Cultivable Waste Land	27503
Old Fellow	30684
Current Fellows	42567
Miscellaneous Trees and Groves	11093
Agriculture, 2014-15	
Fertilizer Consumption (kg/ha)	132.48
Irrigation, Kharif ('000ha)	74855
Irrigation, Rabi ('000ha)	45867
Other Information	
No. of Village Electrified (as on March 2017)	1229
No. of Banks	230
No. of AWC	1846
<i>Source: District Statistical Handbook, Sambalpur, 2020 and District at a Glance 2020</i>	

1.3 Objectives

The objectives of the baseline survey were to obtain information on proposed interventions under SAA around production, consumption, processing and marketing. It is also pertinent to have some background information of the HHs surveyed. The objectives are:

- To assess the socio-economic condition of the HH;
- To outline millet production, productivity and package of practices;
- To examine the consumption pattern of millets and
- To elucidate the method of processing and mode of marketing.

1.4 Methodology

1.4.1 Sample Design

Department of Agriculture and Farmers Empowerment, Government of Odisha introduced the “Special Programme for Promotion of Millets in Tribal Areas of Odisha” in 17 additional districts, including Sambalpur. Therefore, to undertake Baseline Survey 2023-24, Phase VII in the Sambalpur district’s six blocks, i.e., Bamra, Naktideula, Jamankira, Kuchinda, Rairakhol and Jujumura were selected as part of the programme. The survey included potential millet farming households as the responded households from these blocks, selected in consultation with local farmers, NGOs, CSOs, being engaged as the facilitating agencies (FAs) and the District Agriculture Office (DAO), Government of Odisha.

From the list provided by the SAA Programme Secretariat, there were 2801 beneficiary households covering 6 blocks in the Sambalpur district. Six blocks were purposively selected in the first stage of sampling then two GPs were randomly selected from each blocks in the second stage, further two villages were selected from each selected GPs in the third stage. In the fourth stage of sampling, 20 HHs were randomly selected from each sampling village, resulting in 80 households surveyed from each block. The Baseline Survey for 2023 under Phase VII included a total of 480 households from the program households across the 6 Blocks of Sambalpur district.

Out of the total 2801 programme HHs in Sambalpur district, 610 HHs in Bamra Block, 306 HHs in Kuchinda Block, 404 HHs in Jamankira Block, 432 HHs in Naktideula Block, 331 HHs in Rairakhol Block, 718 in Jujumura Block were to be covered under the SAA programme under Phase VII for the year 2023. Under the Baseline Survey 2023 Phase VII, a total of 480 sample HHs were selected for primary data collection covering in the said six Blocks in the Sambalpur district.

Table 1.2: Sample HHs Surveyed in Sambalpur District

Blocks	Participant HHs (N)	Surveyed HHs (N)	% of HHs Covered
Bamra	610	80	13.11
Jamankira	404	80	19.80
Jujumura	718	80	11.14
Kuchinda	306	80	26.14
Naktideula	432	80	18.51
Rairakhol	331	80	24.16
Total	2801	480	17.13

Source: Baseline Survey, 2023

1.4.2 Data Collection, Compilation and Analysis

This comprehensive baseline survey report is based on both secondary and primary data. Primary data was collected by utilizing a Pre-tested Interview Schedule (Annexure II) with respondents from the concerned districts. Additionally, secondary data on geographical information, population, agriculture, education, irrigation, forest and institutions was collected from various published and unpublished sources, including the 2011 Census.

The Baseline Survey is aimed to collect data on various socio-economic indicators such as household demographics, income, livelihoods, education, health, and also collected on production, consumption, processing and marketing.

1.5 Limitations of the Study

The Baseline Survey focuses solely on six Blocks of the Sambalpur District. However, due to the onset of the harvesting season, coupled with both in and out-migration, some household heads and female respondents were found to be absent during the data collection process. Despite these challenges, it is important to acknowledge the limitations of the present study.

Firstly, due to logistical reasons and other difficulties, such as the non-availability of respondents, the study was limited to a random sample of 480 households. Secondly, there is the possibility of recall error, especially in cases involving the actual quantity of consumption and marketing among others. Lastly, in some instances, surveyed households, particularly non-participant farmer households, consumed millets without producing them. This was made possible by past stock and acquiring of millets through exchange and barter. Unfortunately, these details were not captured during the survey.

It is essential to consider these limitations while interpreting the findings of the survey. Future studies can address these gaps and improve the accuracy of the data collection process. Despite these limitations, the present survey provides valuable insights into the socio-economic conditions of the selected households and serves as a baseline to measure the progress made in the future.

1.6 Chapters

The 'Baseline Survey Report 2023, Phase VII' has been divided into six Chapters, including the current Introductory Chapter I, which provided a District Profile, Objectives, Methodology and Limitations. Chapter II provides the Socio-economic Profile of the surveyed Households. Chapter III provides details on the Production and Productivity of Millets. Chapter IV discusses the Consumption Pattern of Millets. Chapter V elucidates the Processing and Marketing of Millets.

Chapter II

SOCIO-ECONOMIC PROFILE

2.1 Introduction

This chapter looks into the social and demographic profile of households surveyed under Baseline Survey 2023, Phase VII, which includes the distribution of sample households by their social groups, and the distribution of the population by gender and age, religion, land ownership, education status, and so on across the six blocks in Sambalpur district. Additionally, also provides information about possession of ration card by the sample households and distribution households by their house structure and annual income of the family.

2.2 Social Composition of HHs

The majority of the HHs from total 480 sample households of all the six blocks belong to Scheduled Tribes (STs), i.e., 53.33 per cent, whereas 41.25 per cent of them belong to Other Backward Class (OBC) community, while rest of the 4.79 per cent of them belong to Scheduled Cast (SC) and 0.63 per cent Others which are normally under General category.

The block-wise distribution of sample households by their social groups shows that in Bamra block, out of total 480 HHs majorities of them belong to 78.75 per cent are ST, OBC community with 16.3 per cent, and 5 per cent are SC. In Jamankira block, most of the sample households i.e., 53.75 per cent households belong to OBC community, 41.25 per cent belong to ST community while 5 per cent are SC out of the total sample households.

Similarly, in Jujumura block, out of the total sample households, ST constitute about 81.25 per cent, 5 per cent OBC and SC constitute of 12.5 per cent and 1.25 as others. Likewise, in Kuchinda block also 78.25 per cent of the sample households belong to ST community, while the share of OBC 16.25 per cent and SC constitute about 2.5 per cent and 2.5 per cent others. In Naktideula Block 66.25 per cent sample households OBC, 32.5 per cent are belonged to ST, and 1.25 per cent SC category. In Rairakhol block shows that 90 per cent are belongs to OBC, 7.5 per cent are ST and 2.5 Per cent are fall under SC Categories.

Table 2.1: Distribution of Sample HHs by their Social Category

Blocks	SC		ST		OBC/SEBC		Others	
	No.	%	No.	%	No.	%	No.	%
Bamra	4	5	63	78.75	13	16.25	0	0
Jamankira	4	5	33	41.25	43	53.75	0	0
Jujumura	10	12.5	65	81.25	4	5	1	1.25
Kuchinda	2	2.5	63	78.75	13	16.25	2	2.5
Naktideula	1	1.25	26	32.5	53	66.25	0	0
Rairakhol	2	2.5	6	7.5	72	90	0	0
Total	23	4.79	256	53.33	198	41.25	3	0.63

Sources: Baseline Survey 2023

2.3 Distribution of Sample HHs by their Gender

The analysis of distribution of sample HHs by their sex is represented in Table 2.2. It is seen that out of 2124 total sample population majority of the sample households of all the six blocks is male having 53.15 per cent and Female 46.85 per cent. Bamara block across blocks has maximum 384 sample households which includes 51.82 per cent male and 48.18 per cent female. Jamankira block has the lowest sample household with 332 which includes 53.92 per cent male and 46.08 per cent female. The main observation in the sample distributions in different block shows male are more than female in the study areas except Jujumura block.

Table 2.2: Sex-wise Distribution of Sample Population across Blocks

Blocks	Male		Female		Total Sample Population
	N	%	N	%	
Bamra	199	51.82	185	48.18	384
Jamankira	179	53.92	153	46.08	332
Jujumura	175	49.72	177	50.28	352
Kuchinda	179	53.12	158	46.88	337
Naktideula	199	53.93	170	46.07	369
Rairakhol	198	56.57	152	43.43	350
Total	1129	53.15	995	46.85	2124

Sources: Baseline Survey, 2023

2.4 Marital Status among the Sample HHs

The marital status of total population in Sambalpur district shows that 53.06 per cent are married, while 42.75 per cent of them are unmarried, while rest of the 2.82 per cent of them are widow, 1.18 per cent widowers and 0.19 per cent are Divorced in the District (Table 2.3). While the distribution of sample households block wise indicates that in Bamra block majority of them belong to 54.95 per cent are married, unmarried are 40.63 per cent, 3.13 per cent are widow, 0.78 per cent widower and 0.52 per cent are found to be divorced.

In Jamankira block 52.41 per cent (Table 2.3) of the sample population are married, 41.87 per cent belong to unmarried group, while 2.31 per cent are widow, 2.41 per cent are widower. Similarly, Jujumura block, out of the total population about 48.86 per cent unmarried, 45.74 per cent married while 3.98 per cent widow, and widower 1.42 per cent. Likewise, in Kuchinda block 57.57 per cent of the population is married, while 38.87 per cent are unmarried and 2.08 per cent population widow, 1.19 per cent are widower and 0.30 per cent are divorced. In Naktideula Block 51.76 per cent are married, 45.26 per cent are belonged to Unmarried, 2.17 per cent are Widow, 0.81 per cent are widower. In Rairakhol that 56.00 per cent are married, 40.86 per cent are unmarried and 2.29 Per cent are widow, 0.57 per cent are widower and 0.29 per cent are divorced in the Block.

Table 2.3: Distribution of the Sample HHs by their Marital Status

Blocks	Total	Unmarried		Married		Widow		Widower		Divorced	
	No.	No.	%	No.	%	No.	%	No.	%	No.	%
Bamra	384	156	40.63	211	54.95	12	3.13	3	0.78	2	0.52
Jamankira	332	139	41.87	174	52.41	11	3.31	8	2.41	0	0
Jujumura	352	172	48.86	161	45.74	14	3.98	5	1.42	0	0
Kuchinda	337	131	38.87	194	57.57	7	2.08	4	1.19	1	0.3
Naktideula	369	167	45.26	191	51.76	8	2.17	3	0.81	0	0
Rairakhol	350	143	40.86	196	56	8	2.29	2	0.57	1	0.29
Total	2124	908	42.75	1127	53.06	60	2.82	25	1.18	4	0.19

Sources: Baseline Survey, 2023

2.5 Distribution of the Sample Population by their Age Group

The age wise distribution of sample population in Sambalpur district shows that from the sample population Infant population is 3.36 per cent, 3.30 per cent are Pre-School, 8.95 per cent Children, 10.12 per cent Adolescence, 45.20 per cent Adults, 18.03 per cent Middle age and the remaining 10.78 per cent are > 60s age group in the district (Table 2.4). In all the blocks it is seen that the adult population is more in compare to other age group.

Table 2.4: Age wise Distribution among Surveyed HHs across Blocks

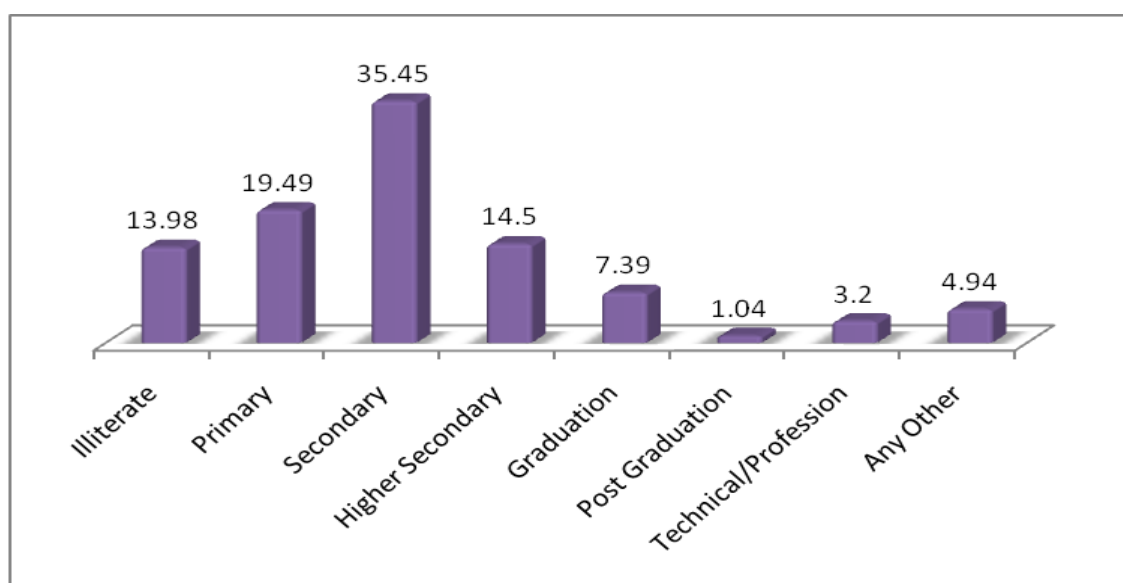
Blocks	Total	Infant		Preschool		Children (6-12 year)		Adolescent (13-18 year)		Adults		Middle Age (45-59 years)		Old Age (60 & above)	
	No.	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Bamra	384	12	3.13	10	2.6	33	8.59	31	8.07	192	50	62	16.15	44	11.46
Jamankira	332	11	3.31	9	2.71	28	8.43	37	11.14	142	42.77	71	21.39	34	10.24
Jujumura	352	12	3.41	10	2.84	43	12.2	47	13.35	165	46.88	37	10.51	38	10.8
Kuchinda	337	12	3.56	15	4.45	23	6.82	25	7.42	147	43.62	77	22.85	38	11.28
Naktideula	369	15	4.07	11	2.98	33	8.94	43	11.65	154	41.73	74	20.05	39	10.57
Rairakhol	350	15	4.29	15	4.29	30	8.57	32	9.14	160	45.71	62	17.71	36	10.29
Total	2124	77	3.63	70	3.3	190	8.95	215	10.12	960	45.2	383	18.03	229	10.78

Sources: Baseline Survey, 2023

2.6 Educational Qualification among the Sample HHs

From the total population of 2124, 35.45 per cent have Secondary qualification, 19.49 per cent have Primary, Higher Secondary are 14.50 per cent. Including this, graduate 7.39 per cent, , 3.20 per cent are Technical/ Professional and 4.94 per cent any other like Diploma, and only 1.04 per cent are post-graduate. In the sample blocks 13.98 per cent Illiterate are present.

Fig 2.1: Qualification wise distribution of Sample Population



Sources: Baseline Survey, 2023

2.7 Distribution of the Surveyed HHs by their Religion

As observed, from the total 480 HHs majority (84.58 per cent) belong to Hindu, whereas only 3 HHs (0.61 per cent) to Islam, and another 71 HHs (14.79 per cent) have Christianity religion. In Bamra block 76.25 per cent are Hindu, Muslim 1.25 only per cent, and Christian is 22.5 per cent only. Also, Jamankira block total 80 HHs surveyed out of which 406 HHs (84.58 per cent) are Hindu, and Christians are 1.25 per cent . In Jujumura block total 80 HHs surveyed out of which 60 per cent are Hindu and Christian are 40 per cent . In Kuchinda block, 87.5 per cent are Hindu, and Christians are 12.5 per cent. Similarly, 86.25 per cent are Hindu, and Christians 13.75 per cent Households in Naktideula block. Whereas in Rairakhhol block all are Hindu.

Table 2.5: Distribution of Sample Population by their Religion

Blocks	Hindu		Muslim		Christian	
	No.	%	No.	%	No.	%
Bamra	61	76.2	1	1.25	18	22.5
Jamankira	79	98.7	2	0	1	1.25
Jujumura	48	60	0	0	32	40
Kuchinda	70	87.5	0	0	10	12.5
Naktideula	69	86.2	0	0	11	13.7
Rairakhhol	80	100	0	0	0	0
Total	406	84.58	3	0.61	71	14.7

Source: Baseline Survey, 2023

2.8 Type of Family among the Sample HHs

In the sample blocks of Sambalpur district out of total 480 households, 79.17 per cent are nuclear family and 20.83 per cent belong in to Joint family (Table 2.6).

In Bamra block, 73.75 per cent are Nuclear and 26.25 per cent are belonging to Joint family. Likewise, Jamankira block, out of 80 total surveyed households 83.75 per cent are nuclear and 16.25 per cent are joint family. In Jujumura block, 76.25 per cent are nuclear and 23.75 per cent are to be Joint Family. Similarly, in Kuchinda block, 76.25 per cent are nuclear and 23.75 per cent belong to joint family. Whereas, 85 per cent are nuclear and 15per cent are belonging to Joint family in Naktideula. Also, in Rairakhhol Block, 80 per cent are Nuclear and 20 per cent are having Joint family.

Table 2.6: Type of Family among the Sample HHs across the Blocks

Blocks	Nuclear		Joint	
	No.	%	No.	%
Bamra	59	73.75	21	26.25
Jamankira	67	83.75	13	16.25
Jujumura	61	76.25	19	23.75
Kuchinda	61	76.25	19	23.75
Naktideula	68	85	12	15.0
Rairakhhol	64	80	16	20.0
Total	380	79.17	100	20.83

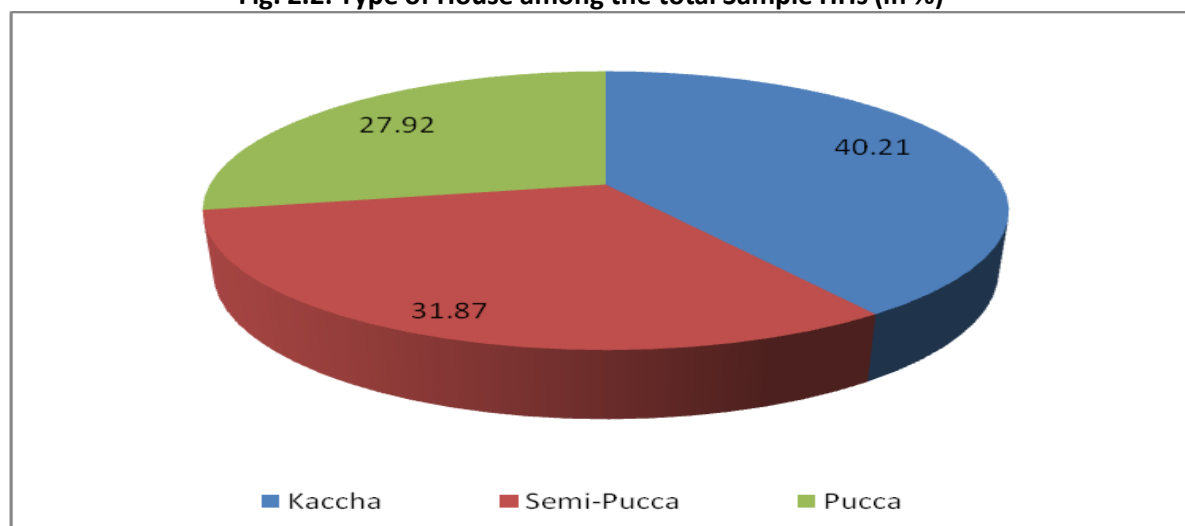
Sources: Baseline Survey, 2023

2.9 Distribution of the Sample HHs by Type of Housing

It is found that in this district majority, 40.21 per cent HHs reported that they have Kaccha houses while 31.88 Per cent HHs has Semi-Kutcha house which constitute 31.87 per cent and only 134 has Pucca houses which about 27.92 per cent of the total sample HHs (Figure 2.2 and Table 2.7).

Similarly, the Block-wise distribution shows that in Bamra block majority of 47.5 per cent HHs has Semi-Pucca houses out of 80 HHs. Out of total 80 sample households 32.5 per cent have Kutcha houses 20 per cent of households have Pucca Houses. Likewise, in Jamankira block majority of 45 per cent HHs has Pucca houses out of 80. 30 per cent have Semi-Pucca houses and 25 per cent of households have Kutcha house.

Fig. 2.2: Type of House among the total Sample HHs (in %)



While in Jujumura block, majority of households i.e. 42.5 per cent of households have Kutcha houses, 27.5 per cent of households have semi-Pucca houses and 30 per cent of households have Pucca houses. Similarly in Kuchinda block, 47.5 per cent Kutcha houses, 33.75 per cent of households have Semi-Pucca houses and 18.75 per cent of households have Pucca houses.

Whereas, 51.25 per cent Kutcha houses, 33.75 per cent of households have Semi-Pucca houses and 15 per cent of households have Pucca houses in Naktideula block. Lastly Rairakhol block, 42.5 per cent Kutcha houses, 18.75 per cent of households have Semi-pucca houses and 38.75 per cent of households have Pucca houses.

Table 2.7: Distribution of Sample HHs by their Type of House across the Blocks

Blocks	Kutcha		Semi-Pucca		Pucca	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Bamra	26	32.5	38	47.5	16	20
Jamankira	20	25	24	30	36	45
Jujumura	34	42.5	22	27.5	24	30
Kuchinda	38	47.5	27	33.75	15	18.75
Naktideula	41	51.25	27	33.75	12	15
Rairakhol	34	42.5	15	18.75	31	38.75

2.10 Distribution of Sample HHs by Possession of Ration Card

Table 2.8 shows the distribution of sample households by their possession of Ration Card across the six sample blocks in Sambalpur district. It shows that 93.33 per cent possess Ration Card, whereas 6.46 per cent possess no Ration Card and another only 0.21 per cent possess Antodaya Cards across the blocks. Bamra block possesses highest (86.25 per cent) and 13.75 per cent HHs without Ration Cards. Out of total 80 sample households in Jamankira block 92.5 per cent have Ration Cards and 7.5 per cent of households without Ration Cards. Likewise, in Jujumura block majority of 95 per cent HHs has Ration Cards and 5 Per cent HHs without Ration Card. While in Kuchinda block, majority of households, i.e. 90 per cent of households have Ration Cards, and 10 per cent of households are Without Ration Cards. In Naktideula block, 96.25 per cent HHs are with Ration Cards and 2.5 per cent of households are Without Ration. Lastly Rairakhol block, all total 80 sample surveyed Households are having 100 per cent Ration Card Holders in the Districts.

Table 2.8: Possession of Ration Card by the Sample HHs across the Blocks

Blocks	Without Ration Card		With Ration Card		With Antodaya Card	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Bamra	11	13.75	69	86.25	0	0
Jamankira	6	7.5	74	92.5	0	0
Jujumura	4	5	76	95.0	0	0
Kuchinda	8	10	72	90.0	0	0
Naktideula	2	2.5	77	96.25	1	1.25
Rairakhol	0	0	80	100	0	0
Total	31	6.46	448	93.33	1	0.21

Source: Baseline Survey, 2023

2.11 Distribution of the Sample HHs by their Occupation

The survey of households in six selected blocks revealed the distribution of economic activities and population across blocks has been presented. It shows that out of the total population of 2124 persons, 26.55 per cent are students, 20.53 per cent farmers/ agriculture, followed by 17.80 per cent house wife and 10.92 per cent of them worked as wage laborers, and 5.79 per cent were business/ entrepreneurship. Government employees accounted for 1.22 per cent, while private employees were 3.86 per cent . 3.30 per cent Unemployed and Pension holders made of 3.91 per cent of the total populations (Table 2.9).

Table 2.9: Distribution of Sample HHs by their Occupation across the Blocks

Main Occupation/ Block	Bamra N (%)	Jamankira N (%)	Jujumura N (%)	Kuchinda N (%)	Naktideula N (%)	Rairakhol N (%)	Total N (%)
Agriculture	88 (22)	28 (8.43)	44 (12.5)	62 (18.4)	107 (29)	107 (30.37)	436 (20.53)
Daily Wage Labour	29 (7.55)	43 (12.95)	40 (11.36)	58 (17.21)	40 (10.84)	22 (6.29)	232 (10.92)
Business/ Entrepreneurship	12 (3.13)	21 (6.33)	23 (6.53)	40 (11.87)	16 (4.34)	11 (3.14)	123 (5.79)
Govt. sector	6 (1.56)	4 (1.2)	0	7 (2.8)	5 (1.36)	4 (1.14)	26 (1.22)
Private Sector	13 (3.39)	5 (1.56)	25 (7.1)	14 (4.15)	16 (4.34)	9 (2.57)	82 (3.86)
Pension/ Remittances	13 (3.39)	25 (7.53)	14 (3.98)	14 (4.15)	6 (1.63)	11 (3.14)	83 (3.91)
Student	100 (26.04)	88 (26.51)	112 (31.82)	82 (24.33)	101 (27.37)	81 (23.14)	564 (26.55)
House-wife	90 (23.44)	74 (22.29)	64 (18.18)	32 (9.5)	51 (13.82)	67 (19.14)	378 (17.8)
Unemployed	12 (3.13)	24 (7.23)	8 (2.27)	9 (2.67)	6 (1.63)	11 (3.14)	70 (3.3)
Others	21 (5.74)	20 (6.2)	22 (6.25)	19 (5.64)	21 (5.69)	27 (7.71)	130 (6.12)
Total	384 (100)	332 (100)	352 (100)	337 (100)	369 (100)	350 (100)	2124 (100)

Source: Baseline Survey, 2023

The block-wise distribution of population by their economic activities is presented. It shows that in Bamra block, out of the 384 population, 26.04 per cent are students Followed by 22.92 per cent of them are Farmers, 7.55 per cent of them worked as wage laborers, 3.13 per cent are business owners, 1.56 per cent engaged in Govt. Sector, 3.39 per cent are Private, Pension/ Remittance 3.39 per cent, 3.44 per cent House wife, and Unemployed 3.13 per cent . In Jamankira block, out of the 332 population, 26.51 per cent are students followed by 22.29 per cent of them are House wife, 12.95 per cent of them worked as wage laborers, 6.33 per cent are business owners, 1.20 Per cent engaged in Govt. Sector, 1.51 per cent are Private, Pension/ Remittance 7.53 per cent and Unemployed 7.23 per cent .

Likewise, Jujumura Block out of the 352 populations, 31.82 per cent (Table 2.10) are students followed by 12.50 per cent of them are Farmers, 18.18 Per cent are House wife , 11.36 per cent of them worked as Wage laborers, 6.53 per cent are Business owners, 7.10 per cent are Private, Pension /Remittance

3.98 per cent and Unemployed 2.27 per cent . Kuchinda Block out of the 337 population, 24.33 per cent are Students followed by 18.40 per cent of the Farmers, 9.50 Per cent are Housewife, 7.21 per cent of them worked as Wage laborers, 11.87 per cent are business owners, 2.08 per cent Govt. sector, 4.15 per cent are Private, Pension /Remittance 4.15 per cent and Unemployed 2.67 per cent .

In the same way Naktideula Block out of the 369 population, 27.37 per cent are students 29.00 per cent of them are Farmers, 13.82 Per cent are House-wife ,10.84 per cent of them worked as wage laborers, 4.34 per cent are Business owners, 1.36 per cent Govt. sector, 4.34 per cent are Private, Pension/ Remittance 1.63 per cent and Unemployed 1.63 per cent. Likewise, Rairakhol Block out of the 350 population, 23.14 per cent are Students, 30.57 per cent of them are Farmers, 19.14 per cent are House wife, 6.29 per cent of them worked as Wage laborers, 3.14 per cent are Business owners, 1.14 per cent Govt. Sector, 2.57 per cent are Private, Pension /Remittance 3.14 per cent and Unemployed 3.14 per cent respectively.

2.12 Distribution of Sample HHs by their Land Ownership

It is found that out of the total 480 HHs, 54.38 per cent are Marginal Owner, 31.46 per cent farmers belong to small owners, 7.50 per cent are medium land owners, 3.75 per cent are Landless and 2.92 per cent of them large land ownership more than 10 Acres in Size. In Bamra block, 67.5 per cent are Marginal Land ownership followed by 25 per cent of them are having small land, 6.25 per cent of them having Medium Land owners, and 1 per cent are large i.e. More than 10 acres Land owners.

Jamankira block, 53.75 per cent are Marginal Land ownership followed by 31.25 per cent of them are having small land, 12.5 per cent of them having Medium Land owners, and 2.5 per cent are large i.e. More than 10 acres of Land owners. Jujumura block, out of the 80 households, 11.25 per cent households are landless. 33.75 per cent are Marginal Landownership, 45 per cent of them are having small and, 10 per cent of them having Medium Land owners. In Kuchinda block, out of the 80 households, 3.75 per cent households are landless.

Marginal Land ownership are 47.5 per cent, 40 per cent of them are having small land, 5 per cent of them having Medium Land owners, and 3.75 per cent are large i.e. More than 10 acres of Landowners. In Naktideula block, out of the 80 households, 5 per cent households are landless. 70 per cent are Marginal Landownership, 22.5 per cent of them are having small and, 1.25 per cent of them having Medium Land owners, and another 1.25 per cent are large i.e., more than 10 acres of Land owners. While Rairakhol block, out of the 80 households, 2.5 per cent households are landless. 53.75 per cent are Marginal Land ownership, 25 per cent of them are having small land, 10 per cent of them having Medium Land owners, and another 8.75 per cent are large i.e., more than 10 acres of Land owners.

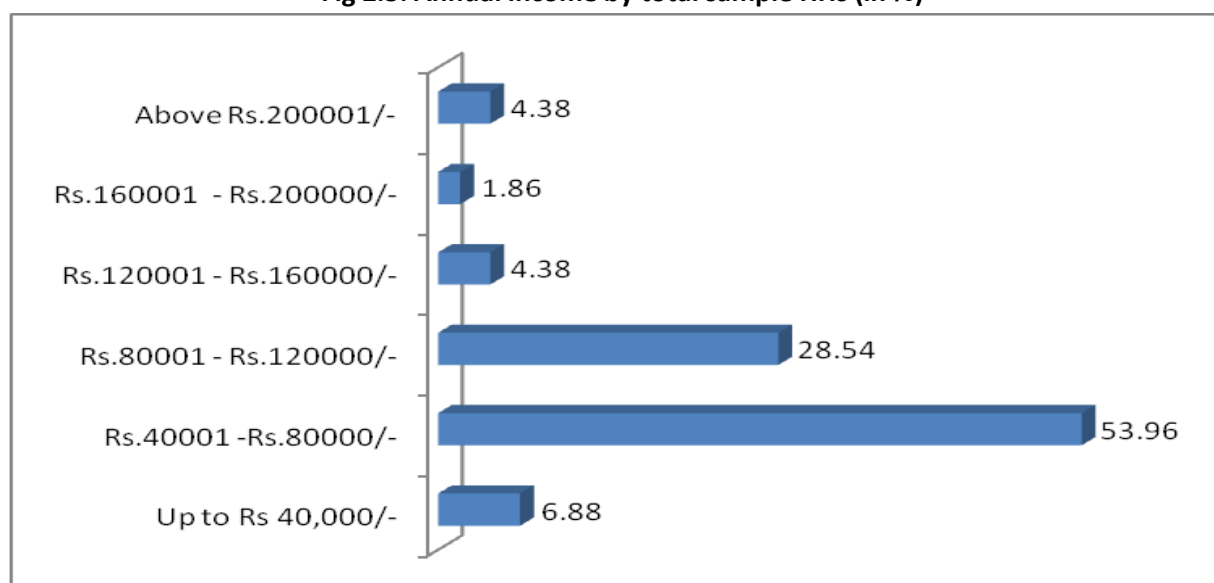
Table 2.10: Distribution of Sample HHs by their Land Ownership (in Acre)

Blocks	Landless		Marginal (0-2.5 acres)		Small (2.5-5Acre)		Medium (5-10Acre)		Large (10 +Acre)	
	N	%	N	%	N	%	N	%	N	%
Bamra	0	0	54	67.5	20	25	5	6.25	1	1.25
Jamankira	0	0	43	53.75	25	31.3	10	12.5	2	2.5
Jujumura	9	11.25	27	33.75	36	45	8	10	0	0
Kuchinda	3	3.75	38	47.5	32	40	4	5	3	3.75
Naktideula	4	5	56	70	18	22.5	1	1.25	1	1.25
Rairakhol	2	2.5	43	53.75	20	25	8	10	7	8.75
Total	18	3.75	261	54.38	151	31.46	36	7.50	14	2.92

2.13 Sample HHs by their Annual Income

Household income is the total gross income received by all members of a household within a year. The survey of households in four selected blocks revealed the distribution of annual income of the household across blocks has been presented in (Figure 2.3 and Table 2.12). It shows that out of the total household of 480 persons, 6.88 per cent of HHs annual income are up to Rs.40000/-; 53.96 per cent of HHs annual income in between Rs.40001/- to Rs.80000/-; 28.54 per cent of HHs annual income in between Rs.80001/- to Rs.120000/-; 4.38 per cent HHs annual income is in between Rs.120001/- to Rs.160000/-; 1.88 per cent annual income is in between Rs.160001/- to Rs.200000/-; and 4.38 per cent of household annual income is above Rs.200001/-.

Fig 2.3: Annual income by total sample HHs (in %)



Sources: Baseline Survey, 2023

As observed in the Baseline Survey (Fig. No 2.7 and Table 2.12), the Block-wise distribution of HHs' annual income shows that in Bamra block majority of HHs has annual income in between Rs.40001/- to Rs.80000/-, i.e. 63.75 per cent. Out of total 80 sample households, 3.75 per cent have annual income up to Rs.40000/-, 15 per cent of HHs annual income in between Rs.80001 - Rs.120000/-; 5 per cent HHs annual income is in between Rs.120001/- to Rs.160000/-; 2.5 per cent annual income is in between Rs.160000/- to Rs.200000/-; and 10 per cent of household annual income is above Rs.200001/-.

Likewise, in Jamankira block 1.25 per cent have annual income up to Rs.40000/-; 47.5 per cent of HHs have income in between Rs.40001/- to Rs.80000/-; 38.75 per cent of HHs annual income in between Rs.80001/- to Rs.120000/-; 5 per cent HHs annual income is in between Rs.120001/- to Rs.160000/-; 2.5 per cent annual income is in between Rs.160000/- to Rs.200000/-; and 5 per cent of household annual income is above Rs.200001/-.

In Jujumura block 18.75 per cent have annual income up to Rs.40000/-; 73.73 per cent of households have income in between Rs.40001/- to Rs.80000/-; 7.5 per cent of HHs annual income in between Rs.80001/- to Rs.120000/-.

In Kuchinda block 1.5 per cent have annual income up to Rs.40000/-; 46.25 per cent of households have income in between Rs.40001/- to Rs.80000/-; 37.5 per cent of HHs annual income in between Rs.80001/- to Rs.120000/-; 6.25 per cent HHs annual income is in between Rs.120001-Rs.160000/-; 2.5 per cent annual income is in between Rs.160000/- to Rs.200000/-; and 6.25 per cent of household annual income is above Rs.200001/-.

Likewise, in Naktideula block 11.25 per cent have annual income up to Rs.40000/-; 53.75 per cent of households have income in between Rs.40001/- to Rs.80000/-; 30 per cent of HHs annual income in between Rs.80001/- to Rs.120000/-; 3.75 per cent HHs annual income is in between Rs.120001-Rs.160000/-; and 1.25 per cent annual income is in between Rs.160000/-to Rs.200000/-. In Rairakhol block 5 per cent have annual income up to Rs. 40000/-; 38.75 per cent of households have income in between Rs.40001/- to Rs.80000/-; 42.5 per cent of HHs annual income in between Rs.80001/- to Rs.120000/-, 6.25 per cent HHs annual income is in between Rs.120001/- to Rs.160000/- ; 2.5 per cent annual income is in between Rs.160000/- to Rs.200000/-; and 5 per cent of household annual income is above Rs.200001/-.

Table No 2.11: Annual income by sample HHs (%)

Blocks	Up to Rs.40000/-		Rs.40001 - Rs.80000/-		Rs.80001 - Rs.120000/-		Rs.120001 - Rs.160000/-		Rs.160001 - Rs.200000/-		Above Rs.200001/-	
	No.	%	No	%	No	%	No	%	No	%	No	%
Bamra	3	3.75	51	63.7	12	15	4	5	2	2.5	8	10
Jamankira	1	1.25	38	47.5	31	38.8	4	5	2	2.5	4	5
Jujumura	15	18.75	59	73.75	6	7.5	0	0	0	0	0	0
Kuchinda	1	1.25	37	46.25	30	37.5	5	6.25	2	2.5	5	6.25
Naktideula	9	11.25	43	53.75	24	30	3	3.75	1	1.25	0	0
Rairakhol	4	5	31	38.75	34	42.5	5	6.25	2	2.5	4	5

Sources: Baseline Survey, 2023

2.14 Conclusion

This Chapter concludes providing abroad over view of the socio-demographic in formation of the selected sample household respondents covered under Baseline Study 2023. It discusses in explicit particulars about the socio-economic status of the respondents. It also reveals that large number of population and household belongs to ST i.e. 53.33per cent . From the total population, 53 per cent are male whereas 47 per cent belong to female population. Married 53.06 per cent, 42.75 per cent of them unmarried, 2.82 per cent of them are Widow and 1.18 per cent is Widower. Age wise Infant population i.e. 3.36 per cent, 3.30 per cent are Pre School, Children are 8.95 per cent, Adolescence 10.12 per cent, Adults 45.20 per cent, Middle age 18.03 per cent and 10.78 per cent are above 60 years Age Group. In six blocks of Sambalpur district 26.55 per cent are Students, 20.53 per cent Farmers/ Agriculture, followed by 17.80 per cent Housewife and 10.92 per cent of them worked as Wage Laborers, and 5.79 per cent were Business/ Entrepreneurship.

Government employees accounted for 1.22 per cent, while private employees were 3.86 per cent. 3.30 per cent Unemployed and Pension holders made of 3.91 per cent of the total populations. It shows that out of the total 480 HHs land holdings highest 54.38 per cent are Marginal Owner, 31.46 per cent farmers belong to small owners, 7.50 per cent are medium land owners ,3.75 per cent are Landless and 2.92per cent of them large land ownership i.e., more than 10 Acres.

Chapter III

PRODUCTION OF MILLETS

3.1 Introduction

In this chapter an attempt has been made to throw some light on the status of production and productivity of millets, usage of seeds, and package of practices in Bamra, Jamankira, Jujumura, Kuchinda, Naktideula and Rairakhol blocks of Sambalpur district. The analysis focuses on the distribution of area under millets and other crops, the usage of seeds and agronomic practices, as well as the production and yield of millets in the sample villages. The chapter also highlights the challenges and opportunities for promoting millets in the district.

3.2 HHs Cultivating of Different Crops

The cultivation of different crops by sample households is revealed in Table 3.1. Out of 480 households, 96.04 per cent HHs are paddy cultivating land, 3.33 per cent are millet cultivating land, 24.79 per cent are vegetable cultivating land and other 13.96 per cent are for cultivating of different crops.

Table 3.1: Distribution of Sample HHs by Cultivation different Crops

Blocks	Paddy		Millets		Vegetables		Others	
	No.	%	No.	%	No.	%	No.	%
Bamra	80	100	2	2.5	2	2.5	2	2.5
Jamankira	80	100	2	2.5	22	27.5	12	15
Jujumura	70	87.5	5	6.25	16	20	10	12.5
Kuchinda	77	96.25	1	1.25	21	26.25	4	5
Naktideula	76	95	2	2.5	19	23.75	17	21.25
Rairakhol	78	97.5	4	5	39	48.75	22	27.5
Total	461	96.04	16	3.33	119	24.79	67	13.96

Source: Baseline Survey, 2023

However, the block wise distribution of crop cultivation in Bamra block 100 per cent land is using for paddy cultivation, 1.25 per cent is for millet cultivation, 2.50 per cent for vegetable cultivation and other 2.50 per cent are for other different crop cultivation. In Jamankira block 100 per cent land is using for paddy cultivation, 2.50 per cent are for millet cultivation, 27.50 per cent for vegetable cultivation and other 15.00 per cent are for other different crop cultivation. Similarly, in Jujumura block 87.50 per cent land is using for paddy cultivation, 6.25 per cent are for millet cultivation, 20 per cent for vegetable cultivation and other 15.50 per cent are for other different crop cultivation.

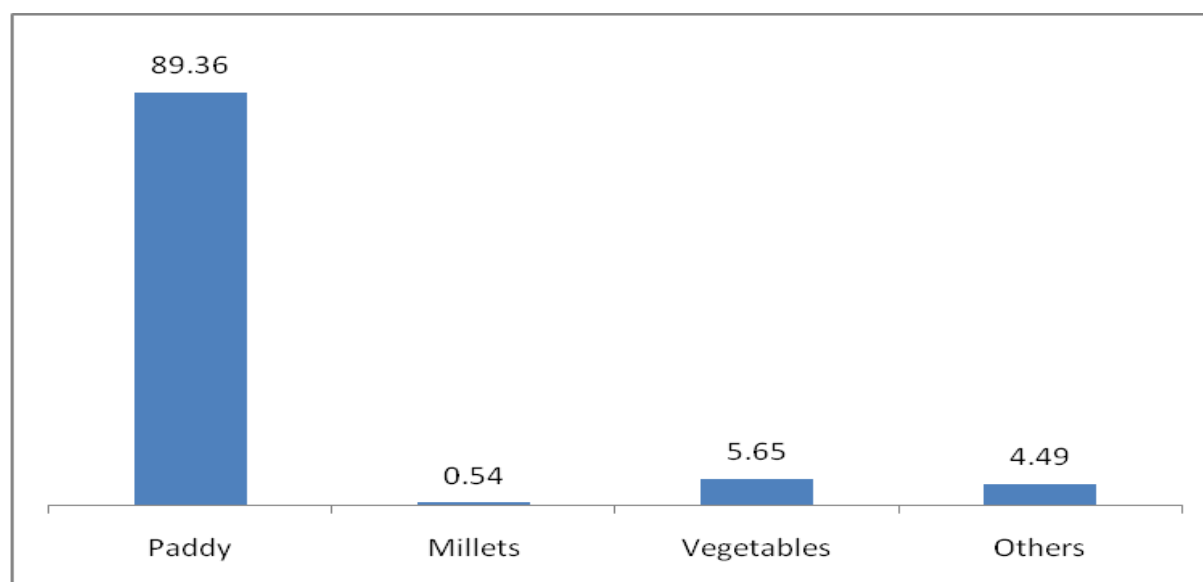
In Kuchinda block 96.25 per cent land is using for paddy cultivation, 1.25 per cent are for millet cultivation, 26.25 per cent for vegetable cultivation and other 5 per cent are for other different crop cultivation. In Naktideula block 95 per cent land is using for paddy cultivation, 2.50 per cent are for millet cultivation, 23.75 per cent for vegetable cultivation and other 21.50 per cent are for other different crop cultivation. And in Rairakhol block 97.50 per cent land is using for paddy cultivation, 5 per cent are for millet cultivation, 48.75 per cent for vegetable cultivation and other 27.50 per cent are for other different crop cultivation.

3.3 Operational Land Holding under Different Crops

The distribution of operational area under millets and other crops across the six surveyed reveals that major portion of the operational areas in the district is under paddy (Table 3.2 and Figure 3.2).

Out of the total 1366.96 acres of operational land 1221.47 acres (89.36 per cent) of total operational land area is under paddy cultivation, 6.8 acre (0.5 per cent) under millets cultivation, 77.17 acres (5.65 per cent) is under vegetables and 61.42 acre (4.49 per cent) is under others crops such as Blackgram, Greengram and others crops.

Fig 3.1: Total Sample HHs by their Operational Land Holding under Crops (in %)



However, in Bamra block 97.75 per cent land is used for paddy cultivation, 0.39 per cent is for millet cultivation, 0.84 per cent for vegetable cultivation and other 1.12 per cent is for other different crop cultivation. In Jamankira block 89 per cent land is using for paddy cultivation, 0.38 per cent is for millet cultivation, 6.09 per cent for vegetable cultivation and other 3.61 per cent are for other different crop cultivation. Similarly, in Jujumura block 91.99 per cent land is using for paddy cultivation, 0.94 per cent is for millet cultivation, 3.72 per cent for vegetable cultivation and other 3.35 per cent are for other different crop cultivation.

Table 3.2: Block wise Sample HHs by their Operational Land Holding under Crops

Blocks	Total	Paddy		Millets		Vegetables		Others	
		Ac.	%	Ac.	%	Ac.	%	Ac.	%
Bamra	177.94	173.94	97.75	1.15	0.39	1.5	0.84	2	1.12
Jamankira	262.64	236.03	89.87	0.5	0.38	15.99	6.09	9.47	3.61
Jujumura	212.18	195.18	91.99	2	0.94	7.9	3.72	7.1	3.35
Kuchinda	250.12	230.12	92	1	0.4	15.9	6.36	3	1.2
Naktideula	180.41	157.95	87.55	0.35	0.19	9.83	5.45	12.28	6.81
Rairakhol	283.67	228.25	80.46	1.8	0.81	26.05	9.18	27.57	9.72
Total	1366.96	1221.47	89.36	6.8	0.54	77.17	5.65	61.42	4.49

In Kuchinda block 92 per cent land is using for paddy cultivation, 0.40 per cent is for millet cultivation, 6.36 per cent for vegetable cultivation and other 1.20 per cent are for other different crop cultivation. In Naktideula block 87.55 per cent land is using for paddy cultivation, 0.19 per cent is for millet cultivation, 9.83per cent for vegetable cultivation and other 12.28 per cent are for other different crop cultivation. And in Rairakhol block 80.46 per cent land is using for paddy cultivation, 0.81per cent are for millet cultivation, 9.18 per cent for vegetable cultivation and other Per cent are for other different crop cultivation. From the block analysis it is seen that in Jamankira block the cultivated land under millet is highest, while it is low in Naktideul block.

3.4 Number of HHs Cultivating Millets

The distribution of sample household cultivating millets across blocks has been presented in Table 3.4. It reveals that out of 480 households, in Bamra block 2 households (2.5 per cent), in Jamankira block 2 households (2.5 per cent), in Jujumura 5 households (6.25 per cent), in Kuchinda 1 household (1.25per cent), in Naktideula 2 households (2.5 per cent) and in Rairakhol 4 households (5per cent) households cultivate millets. In total only 16 households (3.33 per cent) cultivating millets and 464 HHs (96.67per cent) not cultivating millets.

Table 3.3: Distribution of HHs by their Cultivating Millets across the Blocks

Blocks	Cultivated Millets		Didn't Cultivate	
	No.	%	No.	%
Bamra	2	2.5	78	97.5
Jamankira	2	2.5	78	97.5
Jujumura	5	6.25	75	93.75
Kuchinda	1	1.25	79	98.75
Naktideula	2	2.5	78	97.5
Rairakhol	4	5	76	95
Total	16	3.33	464	96.67

Source: Baseline Survey, 2023

3.5 Area, Production and Yield of Millets

The surveyed HHs indicated production of millets only in the form of Mandia. As presented in Table 3.5. It is found that only 16 HHs cultivate millet and the total productions of millets are 16 quintals in total six sample blocks cultivated in an area of 7.35 acre of land in Kharif Season. The yield is 2.35 qntl/acre. There is no production of millet in Rabi and Summer.

Table 3.4: Area, Production and Yield of Millets across Blocks

Blocks	No of HHs Cultivating Millets	Mandia Area (in Acre)	Mandia Production (in Qnt.)	Yield (Qnt. /Acre)
Bamra	2	1.15	5	4.35
Jamankira	2	0.5	2.5	5
Jujumura	4	2	2	1
Kuchinda	1	1	4	4
Naktideula	2	0.35	0.3	0.86
Rairakhol	4	1.8	2.2	1.22
Total	16	6.8	16	2.35

Source: Baseline Survey, 2023

3.6 Types of Land being Used by the Sample HHs

Generally, millets are cultivated in low fertility land, or in other words millets require less rainfall, moderate temperature and an adequate amount of sunlight. Out of total 16 millets cultivating household's 25 per cent HHs cultivated millets in upper land, 12.5 per cent under middle land, 50 per cent under slope land and 12.5 per cent in low land in Kharif seasons. In Sambalpur district large number of HHs cultivate in slope land, out of the total millets cultivated households (Table 3.5).

Table 3.5: Distribution of Sample HHs by their Type of Land being Used

Blocks	HHs Cultivating Millets	Upper Land		Slope Land		Middle Land		Low Land	
	No.	No.	%	No.	%	No.	%	No.	%
Bamra	2	0	0	1	50	0	0	1	50
Jamankira	2	1	50	0	0	1	50	0	0
Jujumura	5	0	0	4	80	0	0	1	20
Kuchinda	1	0	0	1	100	0	0	0	0
Naktideula	2	0	0	1	50	1	50	0	0
Rairakhol	4	3	75	1	25	0	0	0	0
Total	16	4	25	8	50	2	12.5	2	12.5

Source: Baseline Survey, 2023

3.7 Type of Seed being used by the Sample HHs

According to the Baseline Survey 2023, millet farming households in Sambalpur district believe that seed quality is a crucial component of cultivation and crop production. Most of the time, the quality of seeds used determines the volume of production. High-quality seeds are preserved for the next crop to reap the benefits (Table 3.7). Out of the total 16 millets cultivating sample HHs, 15 HHs (93.75 per cent) used the local available seeds and another 1 HH (6.25 per cent) adopted HYV seeds.

Table 3.6: Distribution of Sample HHs by their Type of Seed being used

Blocks	Used Local Seeds		Used HYV Seeds	
	No.	%	No.	%
Bamra	2	100	0	0
Jamankira	2	100	0	0
Jujumura	4	80	1	20
Kuchinda	1	100	0	0
Naktideula	2	100	0	0
Rairakhol	4	100	0	0
Total	15	93.75	1	6.25

Source: Baseline Survey 2023

When we focused on sources of the seeds being used by the millet cultivated HHs it is found that all 15 households (93.75 per cent) who are using local seeds are their own seeds and only 1 household (6.25 per cent) which is HYV seeds being supported by the NGO. All the HHs cultivating millets in 2022 have reported the type of seed used in their fields for millet cultivation in Kharif.

3.8 Quality of Seeds

The quality of seeds used determines the volume of production. High-quality seeds are preserved for the next crop to reap the benefits. It was attempted to understand the general perception of millet farmers, whether they are satisfied with the quality of seeds they use for millets cultivation. From six blocks of Sambalpur district in Kuchinda block it is found that the seed quality is not up to the expectation but in other five blocks having 15 households (93.75 per cent) found quality of seed is good (Table 3.7).

Table 3.7: Distribution of Sample HHs by Quality of Seeds being Used

Blocks	Good		Bad	
	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
Bamra	2	100	0	0
Jamankira	2	100	0	0
Jujumura	5	100	0	0
Kuchinda	0	0	1	100
Naktideula	2	100	0	0
Rairakhol	4	100	0	0
Total	15	93.75	1	6.25

Source: Baseline Survey, 2023

3.9 Package of Practices

As observed in the Survey (Table 3.10) revealed different method of cultivation and techniques. Out of the total 16 millets cultivating HHs adopt different practice for cultivating millets shows that 18.75 per cent HH using SMI method, 25 per cent HH using LT method, 12.5 per cent HH using LS method and majority of 43.75 per cent household using Broadcasting Method.

Table 3.8: Distribution of Sample HHs by their Method of Sowing

Blocks	SMI		LT		LS		Broadcasting	
	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
Bamra	0	0	1	50	0	0	1	50
Jamankira	1	50	0	0	0	0	1	50
Jujumura	0	0	1	20	2	40	2	40
Kuchinda	1	100	0	0	0	0	0	0
Naktideula	0	0	1	50	0	0	1	50
Rairakhol	1	25	1	25	0	0	2	50
Total	3	18.75	4	25	2	12.5	7	43.75

Source: Baseline Survey, 2023

3.10 Use of Pesticide

Pesticides are used in agriculture to control weeds, fungi, insect infestation and diseases. There are many different types' pesticides; each is meant to be effective against specific pests. Table 3.12 reveals that out of total 16 millet cultivating households, five households (31.25 per cent) are using bio-pesticide, 4 HHs (25 per cent) are using chemical pesticide, two households (12.5 per cent) are using both bio and chemical pesticide and the rest five households (31.25 per cent) are not using any

pesticide among the 16 millets cultivating HHs. In addition to this in millet cultivation use fertilizer is totally absent in these six blocks of Sambalpur district.

Table 3.9: Distribution of Sample HHs by their Use of Different Pesticides

Blocks	Bio-Pesticides		Chemical Pesticides		Both		No Use	
	N	%	N	%	N	%	N	%
Bamra	0	0	0	0	0	0	2	100
Jamankira	0	0	0	0	1	50	1	50
Jujumura	3	60	1	20	0	0	1	20
Kuchinda	0	0	1	100	0	0	0	0
Naktideula	0	0	2	100	0	0	0	0
Rairakhol	2	50	0	0	1	25	1	25
Total	5	31.25	4	25	2	12.5	5	31.25

Source: Baseline Survey 2023

3.11 Storage of Seeds

Table 3.10: Distribution of HHs by Storage of Seed

Blocks	Jute Bag		EarthenPot	
	No.	%	No.	%
Bamra	2	100	0	0
Jamankira	2	100	0	0
Jujumura	5	100	0	0
Kuchinda	1	100	0	0
Naktideula	2	100	0	0
Rairakhol	3	75	1	25
Total	15	93.75	1	6.25

After harvesting of millets, storage is the important instruments of any seeds. To store the seeds, HHs used different types of storage facilities like Jute bag, earthen pot, Bamboo basket etc. It is found that majority of households are using jute bag 15 HHs (93.75 per cent) to store the seeds and a single household (6.25 per cent) from Rairakhol block is found using earthen pot to store the seeds. No one use bamboo basket, paddy rope (Pura) or open hanging.

3.12 Weeding

Weeding is the removal of weeds from the field. It is an effective pre-harvesting method of crop protection and crop production management. Weeds act as competitors of the crop for various resources required for growth like nutrients, light, water etc. the entire millets farmer to grow their plant to weeding as manually, as a result the crop became increase. Generally, in rural area, weeds are removed and collected from crop fields by hand. In Sambalpur district 50 Per cent household are doing weeding and other 50 per cent (Table 3.16). However the total 8 HHs are doing weeding and all the total 8 households are doing weeding manually.

Table 3.11 : Sample HHs conducted Weeding

Blocks	HHs Conducted Weeding		HHs Conducted No-Weeding	
	N	%	N	%
Bamra	0	0	2	100
Jamankira	1	50	1	50
Jujumura	4	80	1	20
Kuchinda	0	0	1	100
Naktideula	1	50	1	50
Rairakhol	2	50	2	50
Total	8	50	8	50

3.13 Reasons for not Cultivating Millets

It is found that most of the people are not cultivating millets due to various reasons; such as not profitable, shortage of land, non-availability of seeds and so on. Almost 30 per cent households reported as millets cultivating is not profitable and 30.60 per cent reported as land is not available. Whereas 65.95 per cent farmers reported that, as seeds are not available for millets cultivating and 10.13 per cent household reported for lack of irrigation

Table 3.12: Distribution of Sample HHs for Not Cultivating Millets

Blocks	Not Profitable		Shortage of land		Non-availability of seed		Lack of irrigation		Others	
	No.	%	No.	%	No.	%	No.	%	No.	%
Bamra	23	29.49	29	37.18	31	39.74	0	0	0	0
Jamankira	29	37.18	35	44.87	41	52.56	30	38.46	0	0
Jujumura	32	42.67	16	21.33	55	73.33	0	0.00	0	0
Kuchinda	25	31.65	5	6.33	65	82.28	7	8.86	2	2.53
Naktideula	16	20.51	35	44.87	51	65.38	0	0.00	0	0.00
Rairakhol	14	18.42	22	28.95	63	82.89	10	13.16	3	3.95
Total	139	29.96	142	30.60	306	65.95	47	10.13	5	1.08

3.14 Conclusion

Overall, it is found that mostly Mandia is cultivated across the blocks of Sambalpur district with total productions of 15.1 quintal. Out of the total sample HHs, Mandia is cultivated by only 16 HHs covering an area of 7.35 acre in Kharif season. It is also revealed that all the 16 millets cultivating HHs adopted different practice for cultivating millets shows that 18.75 per cent HH using SMI method, 25 per cent HHs using LT method, 12.5 per cent HH using LS method and majority of 43.75 per cent household using Broadcasting Method.

Chapter IV

CONSUMPTION OF MILLETS

4.1. Introduction

Baseline Survey 2023 was conducted to assess the trend and patterns of millets consumption in the target villages before the programme interventions in the six selected blocks of Sambalpur district, namely Bamra, Jamankira, Jujumura, and Kuchinda Naktideula and Rairakhol. The main objective of this chapter is to analyze how the households that participated in the survey vary in the millets in take in different seasons, and meals, as well as different times of the day across age groups among the population of the sample households. This chapter also explores the diversity of millet varieties, its various recipes and dishes that are consumed by these households. By doing so, the chapter aims to provide a comprehensive picture of the millets' consumption patterns and preferences among the sample households in Sambalpur district, which is one of the focus areas of SAA.

4.2. Consumption of Millets

The patterns of millets consumption of the six selected sample blocks of Sambalpur is described in Fig 4.1 and Table 4.1. Figure 4.1 shows that 43 percent HHs consume millets and 57 per cent HHs were not consume millets in the district.

The block wise distribution of population by millets consumption presented in the Table 4.1 shows that in Bamra block, the rate of millets consumption among Households 28.75 per cent and non-consumption households is 71. In Jamankira block, it is 53.75 per cent households consume millets and, 46.25 per cent households do not consume. In Jujumura block 41.25 per cent is Consumption and 58.75 per cent are non-consumption. Similarly, Kuchinda block 68.75per cent HHs Consumption and 31.25 Per cent HHs are non-consumption. Naktideula Block consumption households are 26.25 per cent and non-consumption household's 73.75 per cent . Likewise, In Rairakhol block 41.25 per cent consuming households and 58.75 per cent Households are non-consuming households. Is also found that in Bamra Block, the average HH Consumption is 4.35 Kg, in Jamankira Block the average HH Consumption is 7.48 Kg, in Jujumura Block the average HH Consumption is 5.38Kg, in Kuchinda Block, the average HH Consumption is 6.86 Kg, in Naktideula Block, the average HH Consumption is 2.11 Kg, and in Rairakhol Block the average HH Consumption is 4.24 Kg.

Fig. 4.1: Consumption of Millets by Sample HHs

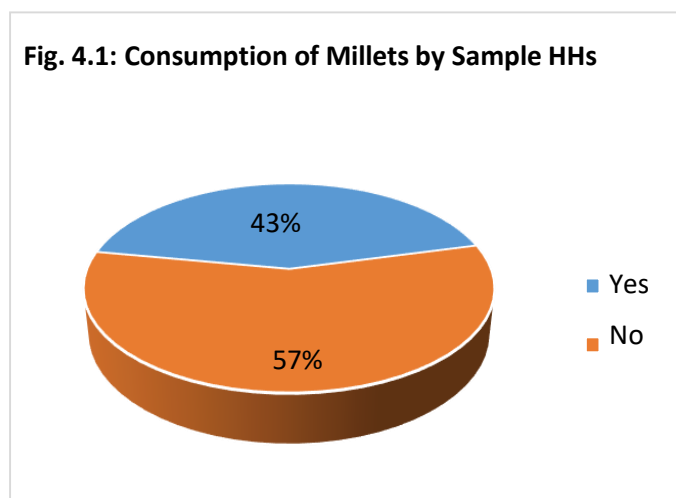


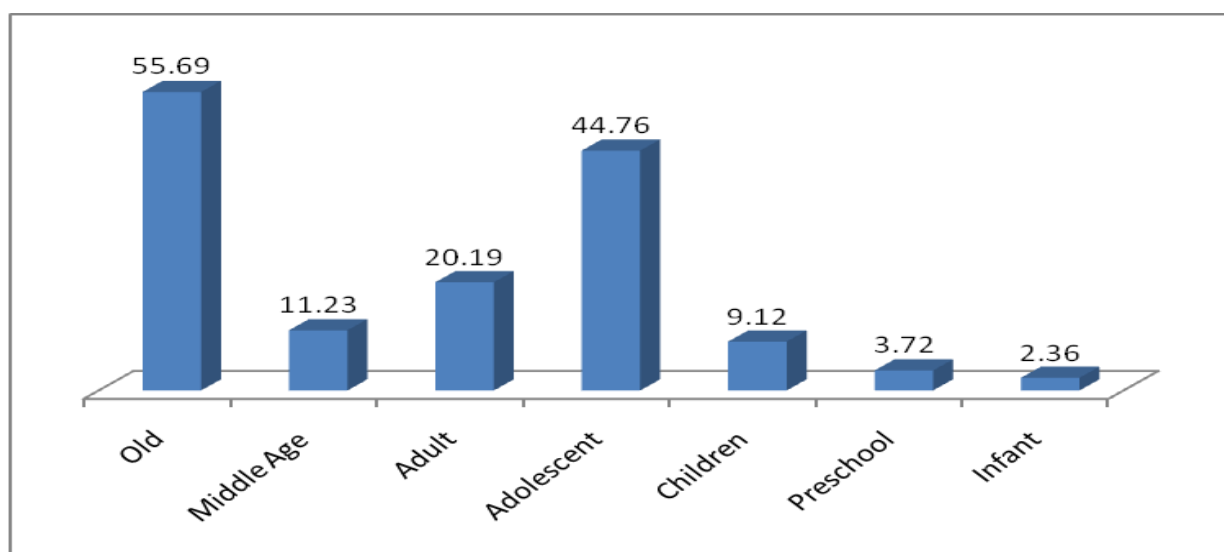
Table 4.1 Consumption of Millets by the Sample HHs across Blocks

Blocks	Consumed		Didn't Consume	
	N	%	N	%
Bamra	23	28.75	57	71.25
Jamankira	43	53.75	37	46.25
Jujumura	33	41.25	47	58.75
Kuchinda	55	68.75	25	31.25
Naktideula	21	26.25	59	73.75
Rairakhola	33	41.25	47	58.75

Sources: Baseline Survey, 2023

4.3. Millets Consumption by different Age Groups

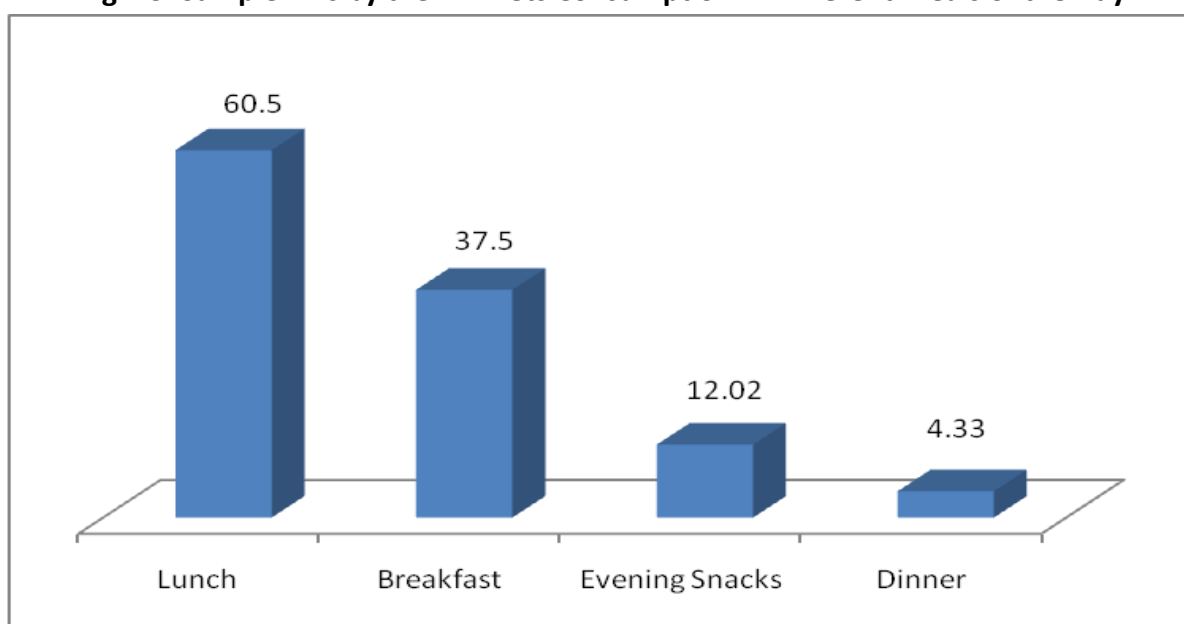
It is found that consumption of millets by the total 2126 of the sample population, out of which 55.69 per cent are consuming millets across the sample blocks in Sambalpur district. It is found that 2.36 per cent are Infant (0 - 2 year), 3.72 per cent are Pre-school (3 – 5 year), 8.61 per cent constitute Children (6 - 12 year), 9.12 per cent are Adolescent (13 - 18 year), 44.76 per cent Adults (19 - 44 year), 20.19 per cent are Middle Age (45 – 59 Years), and 11.23 per cent are Old (60 and above) consuming the Millets across the sample blocks.

Fig 4.2: Age-wise Consumption of Millets

4.4. Millets Consumption in different meals

As observed in the Baseline Survey (Fig.4.3), it is shared that the distribution of households by millets consumption across seasons during different meals of the day across the six selected blocks of Sambalpur district. It shows that out of the total millet consuming households, about 37.50 per cent of sample households consume millets during breakfast, 60.58 per cent of them consume it during lunch while rest of the 12.02 per cent of them consume it during the evening snacks and 4.33 per cent of the households consume millets during dinnertime.

Fig 4.3: Sample HHs by their Millets Consumption in Different Meals of the Day



Source: Baseline Survey, 2023

Block wise distribution of consumption in different meals of the day has been presented in Table 4.3. In Bamra block shows that out of the millet consuming HHs, about 47.33 per cent of sample households consume millets during breakfast, 78.26 per cent of them consume it during lunch while rest of the 13.04 per cent of them consume it during the evening snacks. In Jamankira total millet consumption sample households, 27.91 per cent of sample households consume millets during breakfast, 67.44 per cent of them consume it during lunch, 18.60 per cent of them consume it during the evening snacks and 4.65 per cent of the households consume millets during dinner time. Likewise, Jujumura out of the total millets consuming HHs, 39.39 per cent of sample households consume millets during breakfast, 66.67 per cent of them consume it during lunch, 15.15 per cent of them consume it during the evening snacks and 6.06 per cent of the households consume millets during dinner time.

Likewise, Kuchinda block out of the total consuming HHs, 40 per cent of sample households consume millets during breakfast, 45.45 per cent of them consume it during lunch, 7.27 per cent of them consume it during the evening snacks and 3.64 per cent of the households consume millets during dinner time. Similarly, Naktideula out of the consuming households, 38.10 per cent of sample households consume millets during breakfast, 33.33 per cent of them consume it during lunch, 9.52 per cent of them consume it during the evening snacks and 14.29 per cent of the households consume millets during dinner time. In Rairakhol block, out of total consuming HHs, about 36.36 per cent of sample households consume millets during breakfast, 75.76 per cent of them consume it during lunch, 9.09 per cent of them consume it during the evening snacks.

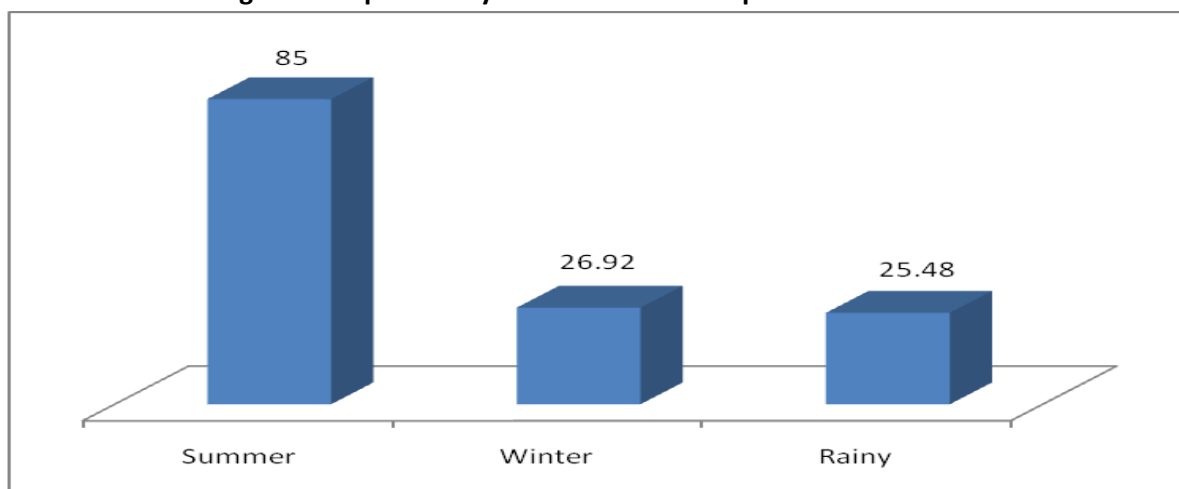
Table 4.2: Sample HHs by their Millets Consumption in Different Meals of the Days

Blocks	Breakfast		Lunch		Evening Snacks		Dinner	
	No.	%	No.	%	No.	%	No.	%
Bamra	11	47.83	18	78.26	3	13.04	0	0
Jamankira	12	27.91	29	67.44	8	18.6	2	4.65
Jujumura	13	39.39	22	66.67	5	15.15	2	6.06
Kuchinda	22	40	25	45.45	4	7.27	2	3.64
Naktideula	8	38.1	7	33.33	2	9.52	3	14.29
Rairakhol	12	36.36	25	75.76	3	9.09	0	0
Total	78	37.5	126	60.58	25	12.02	9	4.33

Source: Baseline Survey, 2023

4.5. Millet Consumption across Seasons

Distribution of total sample population by season-wise millets consumption during different meals of the day is presented in Table 4.3 and Fig. 4.4. It shows that out of the total millet consuming HHs, about 87.50 per cent of population consume millets during summer seasons, 26.92 per cent of them consume it during winter season while rest of the 25.48 per cent of them consume it during the Rainy season across the Block.

Fig 4.4: Sample HHs by their Millet Consumption across Season

Source: Baseline survey, 2023

Especially consumption of millets during Summer is highest. In Bamra block, out of the total consuming HHs, 73.91 per cent of sample HHs consume millets during summer season, 47.83 per cent of them consume it during Winter season while 30.43 per cent of them consume it during the Rainy season. In Jamankira block it is found that out of the total millet consuming sample HHs, highest about 90.70 per cent of sample HHs consume millets during summer season, 18.60 per cent of them consume it during Winter season while 16.28 per cent of them consume it during the Rainy season. In Jujumura block shows out of the total sample HHs, highest about 93.94 per cent of sample population consume millets during summer season, 15.15 per cent of them consume it during Winter season while 39.39 per cent of them consume it during the Rainy season.

Table 4.3: Block-wise Millet Consumption by Sample HHs across Seasons

Blocks	Winter		Summer		Rainy	
	N	%	N	%	N	%
Bamra	11	47.83	17	73.91	7	30.43
Jamankira	8	18.6	39	90.7	7	16.28
Jujumura	5	15.15	31	93.94	13	39.39
Kuchinda	10	18.18	44	80	9	16.36
Naktideula	6	28.57	19	90.48	3	14.29
Rairakhhol	16	48.48	32	96.97	14	42.42

Source: Baseline Survey, 2023

In Kuchinda block, about 80 per cent of sample HHs consume millets during summer season, 18.18 per cent in winter season while 16.36 per cent of them consume it during the Rainy season. Likewise, in Naktideula blocks shows out of the total consuming HHs, highest 90.48 per cent of sample population consume millets during summer season, 28.57 per cent of them consume it during Winter season while rest of the 14.29 per cent of them consume it during the Rainy season. Similarly, Rairakhhol blocks shows that out of the total consuming HHs, 96.97 per cent consume millets during summer season, 48.48 per cent of them consume it during Winter season while rest of the 42.42 per cent of them consume it during the Rainy season.

Table 4.4 reflect about the season wise millets consumption in Kg. Overall, in Sambalpur district, total consumption of millets is 2443 kg. However, in winter season 421 kg, in summer season 1706 kg. and in rainy season 316 kg consume by the millet consuming HHs.

Table 4.4: Millets Consumption (in Kg.) by Sample HHs across Seasons

Blocks	Winter	Summer	Rainy	Total
Bamra	94	217	37	348
Jamankira	53	492	53	598
Jujumura	62	306	62	430
Kuchinda	134	335	90	559
Naktideula	26	119	24	169
Rairakhhol	52	237	50	339
Total	421	1706	316	2443

Source: Baseline Survey, 2023

4.6. Sources of Millets Consumed

The different source from where households were consuming millet is analyzed here in Table 4.6, where it is found that majority of households i.e. 86.54 per cent were consuming millet by purchasing it from market, 7.69 per cent were consuming millet from their own production, also some households were found borrowed it which is only 3.03 per cent. In this way block wise data is already given clearly in the table below.

Table 4.5: Sources of Millet Consumed by HHs

Blocks	Own Production		Purchased		Borrowed/Exchange	
	N	%	N	%	N	%
Bamra	2	8.70	20	86.96	1	4.35
Jamankira	2	4.65	38	88.37	3	6.98
Jujumura	5	15.15	26	78.79	2	6.06
Kuchinda	1	1.82	50	90.91	4	7.27
Naktideula	2	9.52	18	85.71	1	4.76
Rairakhol	4	12.12	28	84.85	1	3.03
Total	16	7.69	180	86.54	12	5.77

Source: Baseline Survey, 2023

4.7. Consumption of millets by the Sample Population in Different recipes

The distribution of sample HHs consumption of various types of recipes prepared in millets is explained in table 4.6. Out of the total, the millet consuming sample HHs, 58.17 per cent) consume *Jau/ Torani* as popular millets recipe, 46.15 per cent of population consume *Khiri*. While *Tampo/ Pitha* are another popular millet recipe which is consumed by 43.75 per cent of the sample households; 11.06 per cent of population consumed *Chhatua* and 2.88 per cent population Consume as *Idli /Upma* as different recipes and 1.92 per cent consumed as others recipes like *Chakuli Pitha and Lladu* etc.

Table 4.6: Consumption of Millets in different Recipes

Blocks	Pitha/Tampo		Chhatua		Jau/ Torani		Khiri		Idli/ Upma		Others	
	N	%	N	%	N	%	N	%	N	%	N	%
Bamra	4	17.39	2	8.70	9	39.13	11	47.83	0	0.00	2	8.70
Jamankira	16	37.21	3	6.98	25	58.14	22	51.16	1	2.33	1	2.33
Jujumura	24	72.73	4	12.1	20	60.61	15	45.45	0	0.00	0	0.00
Kuchinda	18	32.73	5	9.09	27	49.09	23	41.82	1	1.82	0	0.00
Naktideul	9	42.86	2	9.52	12	57.14	8	38.10	1	4.76	1	4.76
Rairakhol	20	60.61	7	21.2	28	84.85	17	51.52	3	9.09	0	0.00
Total	91	43.75	23	11.1	121	58.17	96	46.15	6	2.88	4	1.92

In Bamra block, out of the total millets consuming HHs, 39.13 per cent sample households consume *Jau/Torani* as popular millets recipe, 47.83 per cent of population consume *Khiri*. While *Tampo/ Pitha* is another popular millet recipe which is consumed by 17.39 per cent of the sample households; 8.7 per cent of consumed *Chhatua* and 8.7 per cent consumed as others recipes like *Chakuli Pitha*, ladu etc. In Jamankira block, the recipes consumed by the HHs are *Pitha/ Tampo* (37.21 per cent), *Chhatua* (6.98 per cent), *Jau/Torani* (58.14per cent) *Khiri* (51.16 per cent), *Idli/ Upma* (2.33 per cent), and others (2.33 per cent). Similarly, in Jujumura block, the recipes consumed by the HHs are *Pitha/ Tampo* (72.73per cent), *Chhatua* (12.12 per cent), *Jau/ Torani* (60.61 per cent), and *Khiri* (45.45 per cent). In Kuchinda block, the recipes consumed by the HHs are *Pitha/ Tampo* (32.73 per cent), *Chhatua* (9.09per cent), *Jau/Torani* (49.09per cent) *Khiri* (41.82per cent), and *Idli/ Upma* (1.82per

cent). In Naktideula block, the recipes consumed by the HHs are Pitha/ Tampo (42.86 per cent), Chhatua (9.52per cent), Jau/ Torani (57.14 per cent) Khiri (38.1 per cent), *Idli/ Upma* (4.76 per cent), and others (4.76per cent). In Rairakhhol block, the recipes consumed by the HHs are Pitha/ Tampo (60.61 per cent), Chhatua (21.21 per cent), Jau/ Torani (84.54 per cent) Khiri (51.52 per cent) and *Idli/ Upma* (9.09 per cent).

Source: Baseline survey 2023

4.8 Purchased Millet-based items from the Market for Consumption

Now a day there are various millet-based items are available in the market which was also found in the surveyed area. It is found from the Table 4.8 that there are 35 per cent households were found consuming millet-based items by purchasing it from the market where in block wise analysis, Jujumura block maximum 12.5 per cent were consuming by purchasing it from the market similarly in Naktideula, Kuchinda and Bamra block 6.25 per cent, 7.5 per cent, 8.75 per cent were consuming respectively.

Table 4.7: Sample HHs purchased Millet-based items from Market

Blocks	Purchased from Market		Did not Purchase	
	N	%	N	%
Bamra	7	8.75	73	91.25
Jamankira	0	0	80	100
Jujumura	10	12.5	70	87.5
Kuchinda	6	7.5	74	92.5
Naktideula	5	6.25	75	93.75
Rairakhhol	0	0	80	100
Total	28	5.8	452	94.2

Source: Baseline Survey, 2023

There are various millet-based items selling in the market that are Biscuit, Idli, Chhatua, Pakoda etc. It is seen that people were very much fond of taking Millet based biscuit/Mixture which is about 17.86 per cent then *Idli/ Upma* is taken by 3.57 per cent of household and Chhatua is taken by about 7.14 per cent of households.

Table 4.8: Millets-based Value-added Items being purchased by the Sample HHs

Blocks	Biscuit/Mixture		Idli/ Upma		Chhatua	
	N	%	N	%	N	%
Bamra	2	28.57	0	0	0	0.00
Jamankira	0	0.00	0	0	0	0.00
Jujumura	3	30.00	1	10	0	0.00
Kuchinda	0	0.00	0	0	0	0.00
Naktideula	0	0.00	0	0	2	40.00
Rairakhhol	0	0.00	0	0	0	0.00
Total	5	17.86	1	3.57	2	7.14

Source: Baseline survey 2023

4.9 Conclusion

The patterns of millets consumption in six selected blocks of Sambalpur district have been discussed in this chapter. The rate of millets consumption HHs is lowest than the non-consumption households, i.e., 43 per cent consumption among the total sample HHs and 57 per cent HHs were not consume millets in the district. In term of season-wise millets consumption during different meals of the day across the blocks of Sambalpur district. It shows that out of the total millet consuming households, about 37.50 per cent of sample households consume millets during breakfast, 60.58 per cent of them consume it during lunch while rest of the 12.02 per cent of them consume it during the evening snacks and 4.33 per cent of the households consume millets during dinner time. However, season-wise millets consumption HHs, about 87.50 per cent of population consume millets during summer seasons, 26.92 per cent of them consume it during winter season while rest of the 25.48 per cent of them consume it during the Rainy seasons across the Block. Out of the total millet consuming HHs, 58.17per cent sample households consume *Jau/ Torani* as popular millets recipe, 46.15 per cent of population consume Khiri. While Tampo/ Pitha is another popular millet recipe which is consumed by 43.75 per cent of the sample households; 11.06 per cent of population consumed Chhatua and 2.88 per cent population Consume as Idli/ Upma as different recipes and 1.92 per cent consumed as others recipes like Chakuli Pitha, ladu etc. Further, out of the total sampled HHs, 35 per cent of HH purchased millets-based item from market for their consumption.

Chapter V

PROCESSING AND MARKETING OF MILLETS

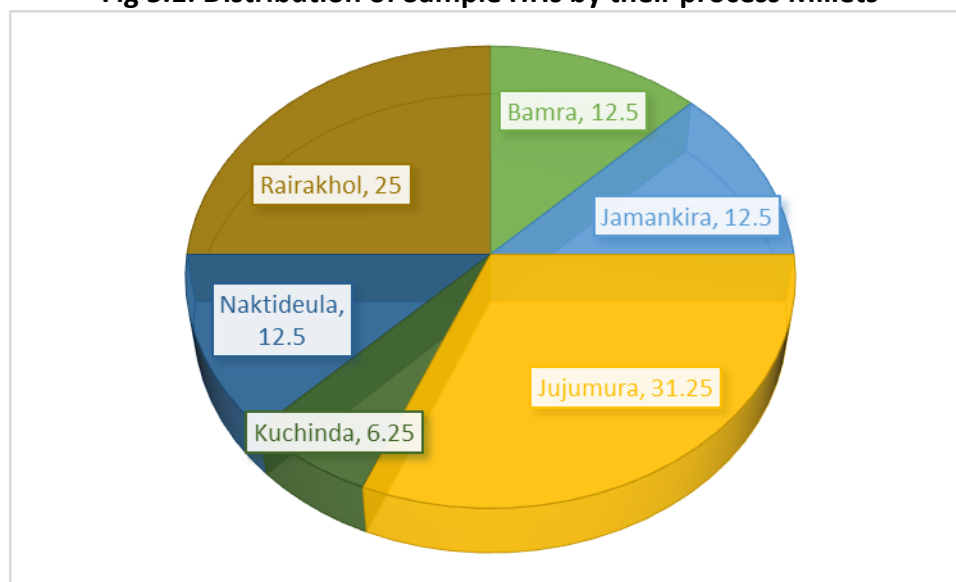
5.1. Introduction

Marketing millets as well as all millets varieties-based products largely depends on the extent of millets produced in the locality and other accessible places in the State. Based on the findings and analysis of the Baseline Survey held in four blocks of Sambalpur district. This chapter discusses the various methods being adopted by the respondents on millet farming and processing, availability and the distance covered by the households to reach the processing and milling units. It discussed the various modes of marketing as well as the exact trend in utilization of millets by the sample respondent HHs.

5.2. Processing of Millets

It is found that out of the total sample HHs, 16 HHs processing the millets. All the millet producer farmers (16) are processed millets. The block-wise pattern of processing by the HHs represented in the Table 5.1 reveals that in Bamra block, 2 HHs (12.5 per cent); in Jamankira block, 2 HHs (12.5 per cent); in Jujumura block 5 (31.25 per cent); in Kuchinda 1 HHs (6.25 per cent); in Naktideula 2 HHs (12.5 per cent) and in Rairakhol 4 HHs (25 per cent) process millets, out of the total sample households.

Fig 5.1: Distribution of Sample HHs by their process Millets



Source: Baseline Survey, 2023

5.3. Methods of Processing Millets

The Surveyed Households usually prefer to process millets manually by using Stone Grinder or *Chaki* (traditionally called), in course of time technological innovation accessibility of machines made easy for the processing of millets. Now-a-days, slowly prefer both the mode of processing of millets like manual and also machinery. As per the Survey, all the households process millets by using machinery.

5.4. Distribution of the Sample HHs by their Selling Millets

When the production is satisfactory or when the millets farmer produces more than their own consumption they usually go for selling. In all the surveyed blocks, from 16 cultivated millets household only 2 HHs (12.50 per cent) sold their raw products and value-added product these 2 HHs (1 from Bamra block and 1 from Jujumara block) sold through middle man / local business man.

5.5. Conclusion

To conclude the chapter, the processing and marketing of millets in the sample households, it reveals that 16.87 per cent households are doing processing. Out of the total millets processing HHs, large portion of HHs processed in machine compare to traditional methods of processing. However, it is also observed that a very limited number of households processed millet both methods. Further, only two household sold millets by mode of public transport to the Selling Point/ Middle business person through the process of Money.

Annexure 1: Mapping of Baseline Survey Data of Sambalpur District

	Unit	Baseline Value						Total
Indicators		Bamra	Jamankira	Jujumura	Kuchinda	Naktideula	Rairakhol	
% of Sample HHs Cultivating Millets	%	2.5	2.5	6.25	1.25	2.5	5	3.33
Types of Millets Cultivated (2022)								
a) Mandia	%	2.5	2.5	6.25	1.25	2.5	5	0
Area under Millets/ HH (Acre)	Acre	1.15	0.5	2	1	0.35	1.8	6.8
Millet Production per HHs	Qtls	0.025	0.025	0.05	0.0125	0.25	0.05	0.033
Agricultural Practices								
Package of Practices	%							
a) Broadcasting	%	50	50	40	0	50	50	43.75
b) LS	%	0	0	40	0	0	0	12.5
c) LT	%	50	0	20	0	50	25	25
d) SMI		0	50	0	100	0	25	18.75
Yield Rate (Qtls/ Acre)	Qtls	4.35	5	1	4	0.86	1.22	2.35
HHs Consuming Millets\								
a) Breakfast	%	47.83	27.91	39.39	40	38.1	36.36	37.5
b) Lunch	%	78.26	67.44	66.67	45.45	33.33	75.76	60.58
c) Evening	%	13.04	19.6	15.15	7.27	9.52	9.09	12.02
Snacks								
d) Dinner	%	0	4.65	6.06	3.64	14.29	0	4.33
Popular Millets Recipes (% HHs)								
a) Tampo/	%	17.39	37.21	72.73	32.73	42.86	60.61	43.75
Pitha								
b) Jau/ Torani	%	39.13	58.14	60.61	49.09	57.14	84.85	58.17
c) Khiri	%	47.83	51.16	45.45	41.82	38.1	51.52	46.15
d) Chhatua	%	8.7	6.98	12.12	9.09	9.52	21.21	11.06
% of HHs using Processing Ragi								
a) Manually	%	55.56	55.88	6.9	25	20	45.45	34.94
b) Machines	%	27.78	41.18	93.1	75	80	54.55	62.65
c) Both	%	16.67	2.94	0	0	0	0	2.41
% of HH Selling Millets		50	0	20	0	0	0	12.5
a) Middleman	%	100	0	100	0	0	0	100
b) Mandi	%	0	0	0	0	0	0	0
c)Haat	%	0	0	0	0	0	0	0
c. Money lender/ Sahukar	%	0	0	0	0	0	0	0

Source: Baseline Survey, 2023



Annexure 2

Confidential and to Be Used for Research Purpose Only

Households Schedule for

Baseline Survey 2023-24, Phase VII of SHREE ANNA ABHIYAN (SAA)

Serial No.....

Date.....

Part-I: Socio-Economic Status

1. Profile of the Households

1.1. Name of the Households' Head:

1.2. Name of the Respondent:

1.3. Name of the (i) Village: (ii) GP

(iii) Blocks: (iv) District:

1.4. Category: (i) SC (ii) ST (iii) OBC/SEBC (iv) Others (specify)

1.5. Religion (i) Hindu (ii) Muslim (iii) Christian (iv) Animism (v) Others

1.6. Ration Card Holding: (i) Ration Card (ii) Antyodaya Card (iii) Other (iv) No Card

1.7. Type of Family: (i) Nuclear (ii) Joint (iii) Extended (iv) Others (specify)

1.8. House Structure: (i) Katcha (ii) Semi-Pucca (iii) Pucca

3. HHs' Land ownership in Acre:.....

4. Operational Holdings Under Different Crops (in Acre)

Sl No.	Name of the Crops	Yes/ No	Own Land*	Leased-in*	Sl. No.	Name of the Crops	Yes/ No	Own Land*	Leased-in*
a	Paddy				c	Vegetables			
b	Millets				d	Any Others Crops			
Total Operational Holding									

5. Annual Expenditure:

Sl. No	Source	Expenditure Heads						Total Amount (in Rs.)
	Agriculture	Land Preparation	Transplantation/ Sowing	Weeding	Fertilizers/ Pesticides	Harvesting	Others	
1	a) Millet							
	b) Paddy							
	c) Vegetables							
	d) Any Other Crops (Specify)							
3	Households Expenses							
4	Other HH Expenses							
	Total							

6. Annual income of the HH (last year.....)

7. Have you taken any agricultural loan?

1-Yes 2-No If yes, please provide details.....

2. Household Particulars:

Sl. No	Name of the HH Members	Relationship with HoH (Use Code)	Age	Sex	Marital Status (Use Code)	Educational Qualification (Use Code)	Main		Subsidiary		Consume Millet (Yes/No)
							Occupation (Use Code)	Annual Income	Occupation (Use Code)	Annual Income	
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											

Codes: Marital Status: 1- Married, 2- Unmarried, 3- Widow, 4- Widower, 5- Divorced, 6- Separated, 7- Any Others (pl specify)
Relationship: 1-Self, 2- Spouse, 3- Son, 4- Daughter, 5- Daughter-in-Law, 6- Son-in-Law, 7- Father, 8-Mother, 9-Brother, 10-Sister, 11- Grandson, 12- Granddaughter, 13- Father- in-Law, 14- Mother-in-Law, 15- Any Other (Specify)
Education: 1- Illiterate, 2- Up to Class 5, 3- Class 6-10, 4- Higher Secondary, 5- Graduate, 6- Post-Graduate, 7- Technical (Diploma/Degree), 8- Professional/Management, 9- Any Other (Specify)
Occupation: 1- Agriculture, 2- Daily Wage Labour, 3- Business/Entrepreneurship, 4- Govt sector, 5- Private Sector, 6- Pension/Remittances 7- Student 8- Housewife, 9- Unemployed, 10- Others (pl. specify)

Part-II: Production of Millets

8. Do you cultivate millets?

1-Yes 2-No

If yes, give millet-wise production details

Sl. No.	Millet Crops	Season	Area (in Acre)	Land Type Used	Sources of Irrigation	Type of Seed Used	Source of Seed	Quality of Seeds	Method of Cultivation	Use of Fertilizer	Use of Pesticides	Production (Qnt.)	Kept for Seed (Qnt.)	Kept for Consumption (Qnt.)	For Marketing (Qnt.)
a	Mandia	Kharif													
		Rabi													
		Summer													
b	Suan/ Kosla /Gurji	Kharif													
		Rabi													
		Summer													
c	Koda	Kharif													
		Rabi													
		Summer													
d	Any other (specify)	Kharif													
		Rabi													
		Summer													

Land Type Used: 1-Upperland, 2-Slope Land, 3-Middle Land, 4-Low Land.

Sources of Irrigation: 1. Rain, 2. Farm Pond, 3- Stream, 4- MIP/WS, 5-River, 6- Canal, 7- Bore well, 8-Others(Specify).

Type of Seed Used: 1-Local, 2- Certified, 3-HYV. Source of Seeds: 1-Own Seed, 2- Relatives, 3-Market, 4- NGO, 5- Govt./ Community Seed Centre, 6-Others (pl. specify)

Quality of Seeds: 1. Good, 2. Average, 3. Bad

Method of Cultivation: 1) SMI- System of Millets Intensification, 2) LT- Line Transplantation, 3) LS- Line Showing, 4) Broadcasting, 5) Others (specify)

Use of Fertilizer: 1) Organic Manure, 2) Chemical Fertilizers, 3) Both, 4) No Use. Pest Control: 1) Bio-Pesticides, 2) Chemical Pesticides, 3) Both, 4) No Use

9. **Whether you follow mixed farming or mono farming system?** 1. Mixed 2. Mono
If mixed, with which are the crops(s)?
10. **How do you store your seed and grain?**
(i) Jute Bag (ii) Earthen Pot (iii) Bamboo Basket (iv) Pura (paddy rope)
(v) Open Hanging (vi) Other (Specify)
11. **Had your seed or grain got damaged during last year?** 1. Yes 2.No
12. **Have you done weeding for the millets cultivation?** 1. Yes 2. No
13. **If Yes, Number of times you do weeding in your millet fields, by each method?**
1) Manually _____ 2) By Weeder _____ 3) Both _____
14. **If By Weeder, Sources of weeder?**
i) Own ii) Rental iii) Borrowed from Neighbours iv) Govt. Provided v) Other
15. **If HH is not cultivating any of the millets, what is the reason?**
(i) Not profitable (ii) Shortage of land (iii) Non-availability of Seeds
(iv) Lack of Irrigation (v) Others (pl. specify)
16. **How many years have you not cultivated Millets ?**
17. **Do you like to cultivate Millets under this programme?** 1.Yes 2.No

Part-III: Consumption of Millets

18. **Does your households consume millets?** 1. Yes 2. No
If Yes, Types of millets your HH consumed in different seasons (Put Tick Mark)

Sl. No.	Name of the Millets	Winter				Summer				Rainy			
	Times	Breakfast	Lunch	Evening Snacks	Dinner	Breakfast	Lunch	Evening Snacks	Dinner	Breakfast	Lunch	Evening Snacks	Dinner
a	Mandia												
b	Suan/ Kosla / Gurji												
c	Koda												
d	Any Other Millets (Specify)												

19. Millets Requirements of the HH:

Sl. No.	Seasons	Millets Consumed (in Kg.)	Total Requirement of Millets (Kg.)	Sources of Millet Consumed by HH (in Kg)				Total
				Produced	Purchased	Borrowed/ Exchanged	Other Sources	
a	Winter							
b	Summer							
c	Rainy							
d	Total							

20. Consumption of Millets in different Recipes (Put Tick Mark)

Sl. No.	Name of The Millets	Pitha/ Tampo	Chhatua	Jau/ Torani	Khiri	Idli/ Upama	Sweets Items	Others (Specify)	Remarks
a	Mandia								
b	Suan/ Kosla/ Gurji								
c	Kodo								
d	Any Other Millets (Specify)								

21. Is there any special occasion when you prepare millets based items?

1. Yes 2. No

If yes, what is/are the occasion(s) (specify)? _____

22. For this what type of millet is required (specify)? _____

23. Do you purchase Millet Based Products from market for consumption?

1.Yes 2.No

24. If Yes, what are the millets-based items you usually purchase from the market?

1. Biscuit/Mixture 2. Idli/Upama 3. Chhatua 4. Pakoda 5. Others (Specify)

25. How do you like the taste of millet-based products you purchased from market?

1. Liked it 2. So-so 3. Do not Like it

Part-IV: Processing of Millets

26. Do you process the millet products in your house?

1.Yes 2.No

27. If Yes, who among your family members involved in the processing of millets?

i). Nos. of Male members_____. ii). Nos. of Female members_____

28. How do you process the millets?

a) Traditionally b) Machinery c) Both

d) Others (Specify)

29. If traditionally, please elaborate the methods of processing.

30. If Machinery, how far is the location of the processing unit from your village? ____km

Part-V: Marketing of Millets

Sl. No.	Millet Crops	Yes /No	Sources of Millets You Sale	Quantity	Price / Kg.	Govt. Price (MSP)	Where did you sell your millets	Distance in Km	Mode of Transportation Used for Millets Sale	Reason for Sale
a	Mandia									
b	Suan/ Kosla /Gurji									
c	Koda									
d	Any other (specify)									

Sources of Millets You Sell: 1. Own Produced, 2. Purchase from Farmers, 3. Others (Specify)

Where Sold Your Millets: 1. Govt. *Mandi*, 2. Middlemen/ Local Businessman, 3. Moneylender/ *Sahukar*, 4. Daily market/ Haat 5. Others (pl. specify)

Mode of Transportation: 1. Headload, 2. Cycle, 3. Cart, 4. Own Vehicle, 5. Hired Vehicle, 6. Public Transport, 7. Others (Specify)

Reason for Sale: 1. Better Price, 2. Immediate Need of Cash, 3. Loan Repayment, 4. Non-Availability of Market, 5. Any Others (specify)

31. Do you sell millets?

1. Yes 2. No

32. Types of Millets, you Sell and Quantity

33. Any instance of distress sale (less than the market price) of Millets?

1. Yes 2. No

34. If yes, what is the sale price.....and what is the market price.....

35. What are the marketing processes followed by you? a) Barter

b) Money c)

Others (specify)

36. Do you sell any millet based value-added products?

1. Yes 2. No

37. If yes, provide the details about the Millet Based Value Added Products your sale.

38. Remarks

Contact no of Respondent

Signature of the Researcher/Field Investigator

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ନବକୃଷ୍ଣ ଚୌଧୁରୀ ଉନ୍ନୟନ ଗବେଷଣା କେନ୍ଦ୍ର
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