

BASELINE SURVEY: PHASE VII

SUNDARGARH 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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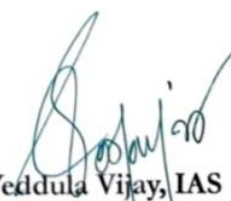
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FOREWORD

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 program 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 analyze 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 successful completion of the 'Baseline Survey Report of Phase VII, 2023'. This endeavour is 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 the 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 staff of the State Project Monitoring Unit (SPMU), for their unwavering support and assistance throughout this project.

My sincere gratitude goes to the Chief District Agricultural Officer (CDAO) of Subarnapur 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. Working alongside each of you has been a privilege, 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, SAA

EXECUTIVE SUMMARY

Sundargarh district is one of the 17 districts where the 'Special Programme for the Promotion of Millets in Odisha, Shree Anna Abhiyan (SAA),' Phase VII has begun in the Kharif 2022 in its three blocks, namely Sundargarh Sadar, Baragaon, and Subdega. Under Phase VII of implementing the Shree Anna Abhiyan (SAA) in Sundargarh district, 2061 Program Households are identified for the programme. Out of these, 240 households were selected through the random sampling method and conducted the Baseline Survey, 2023.

Under the Survey, data is collected from 240 sample households across the three blocks, and it is revealed that among the surveyed households, 73.75 per cent belonged to the Scheduled Tribe, followed by Other Backward Class /Socially and Educationally Backward Class (17.50 per cent). 6.67 per cent are Scheduled Caste and only 2.08 per cent belong to the General Category. The total sample population of the surveyed households is 898, out of which 52.23 per cent are male and 47.77 per cent are female. The religious composition of the surveyed households indicates that 38.33 per cent are Hindu and 61.67 per cent of HHs are Christian, and out of the total sample, HHs as many as 94.58 per cent possess Ration Card.

As observed, a significant portion of the population (31.74 per cent) are Farmers, followed by Students (23.39 per cent). The share of Wage Labourers is 7.91 per cent, while Businessmen account for 0.56 per cent, and Private Employees are 1.22 per cent. Housewives made up 22.27 per cent, and 6.12 per cent are Unemployed. Out of the total, 138 sample HHs (57.50 per cent) have Semi-Pucca houses, 82 sample HHs (34.17 per cent) have Kutchha houses, and 20 sample HHs (8.33 per cent) have Pucca houses. As far as their education is concerned, out of the total population, 82.18 per cent were literate. It is also found that out of the total 55.00 per cent of the sample HHs have Small Land ownership and followed by 26.67 per cent Marginal Land Owners, 14.58 per cent Medium Land Owners and only 3.75 per cent belong to the Large Land Ownership group. Concerning their income, it is found that only 7.50 per cent of HHs have their income above 2 Lakh rupees per year.

The baseline field survey found that one sample household each in Baragaon and Sundargarh Sadar Block had cultivated millets in the year 2022. As shared, the total operational area among the sample households across the three sample blocks is 845.25 acres, out of which 827.00 acres are under Paddy cultivation, 0.75 acres are under millets, and 17.5 acres are under Vegetable cultivation. The total production of millets 1.00 Qtls by the two farmers in the Kharif season and yield found 1.33, they don't cultivate millets in other seasons. It is also revealed that most of the agricultural activities are carried out by both male and female members of the household.

Across the three blocks, it is also found that out of the total 898 sample population, 22.08 per cent consume millets regularly. Consumption of millets is highest (100 per cent) during the summer season, while 28.30 per cent consume during the rainy season, and another 39.62 per cent consume during the winter season. The baseline data also indicate that most people consume millet during their Breakfast, 64.15 per cent, followed by 54.72 per cent during Lunch and another 13.21 during their Evening Snacks. *Jau/Torani* is the popular recipe among the surveyed households that consume which is 52.83 per cent, 73.58 per cent as *Tampo / Pitha*, the other popular recipes are *Khiri*, which is being consumed by as many as 18.87 per cent of the sample population. Out of the total sample households, 3.77% consume millets as Idli or Upma, and notably, 2 households cultivate and process millets for their own consumption.

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ABBREVIATIONS

APL	: Above Poverty Line
BPL	: Below Poverty Line
CBO	: Community-Based Organisation
CRP	: Community Resource Person
FGD	: Focused Group Discussion
FPO	: Farmer Producers Organization
Ha	: Hectare
HH(s)	: Household(s)
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 Organization
OBC	: Other Backward Classes
PDS	: Public Distribution System
PVT	: Participatory Variety Trial
Qtls	: Quintal
SAA	: Shree Anna Abhiyan
SC	: Scheduled Caste
SMI	: System of 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 Glycaemia 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 that belongs to the Poaceae family, commonly known as the grass family. Millets are small, round, whole grains grown in India, Nigeria, and other Asian and African countries. It is considered an ancient grain, used both for human consumption, 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 (or white), Finger (or ragi); Minor millets include: Kodo, Barnyard, Little, Guinea, Brown top, Fonio, Adlay (or 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 gets further attention from the 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 the 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 (also known as Shree Anna Abhiyan or SAA) with a novel organisational structure was initiated by the Government of Odisha in 2017-18 emphasising 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.

The Shree Anna Abhiyan 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. It aimed to promote the production, consumption, processing, and marketing of millets, with a particular focus on tribal areas. The program had a unique structure that emphasized cultivating traditional millets such as Ragi, Gurji, Kosla (Small Millets), Kodo, Kangu (Foxtail Millet), and Jowar, 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 2022, the implementation of SAA phase VII began in 17 districts, including Sundargarh district, and this baseline study aims to provide information on the program's dimensions in the district. The profile of the Sundargarh district is presented below.

1.2 District Profile

Sundargarh District is a district in the northwestern part of Odisha state in eastern India. Sundargarh district is bounded by Raigarh district of Chhattisgarh in the west, Jashpur district of Chhattisgarh in the North-West, Simdega district of Jharkhand in the North, West Singhbhum district of Jharkhand and Keonjhar district of Odisha in the east and Jharsuguda, Sambalpur, Deogarh and Angul districts of Odisha in the South. The town of Sundargarh is the district headquarters. Rourkela is the largest city in the entire district.

1.2.1 Geography and Climate

The Sundargarh district forms the northwestern part of the Odisha state and is the second-largest district in the state, accounting for 6.23 per cent of the total area. The geographical area of the district is 9,712 km² (3,750 sq. mi). The district spreads from 21°36'N to 22°32'N and from 83°32'E to 85°22'E.

1.2.2 The Economy

During the year 2014-15, the net area sown was 207 thousand hectares against 4474 thousand hectares of the state. The production of Paddy was 7521790 quintals, 3409 quintals Wheat, 9284 quintals maize, 274 quintals Greengram, 4978 quintals Blackgram, 12007 quintals Horsegram, 6903 quintals Til, 9004 quintals Groundnuts, 2906 quintals Mustard, 84287 quintals Potatoes and 10296 quintals Sugarcane. During 2014-15, the total fertilizers used were 12569 MT in the district, with a breakage of 7548 MT 2 nitrogenous, 3771 MT phosphatic, 1250 MT potassic and the use of fertilizer per hectare is 32 Kg.

1.2.3 Demography

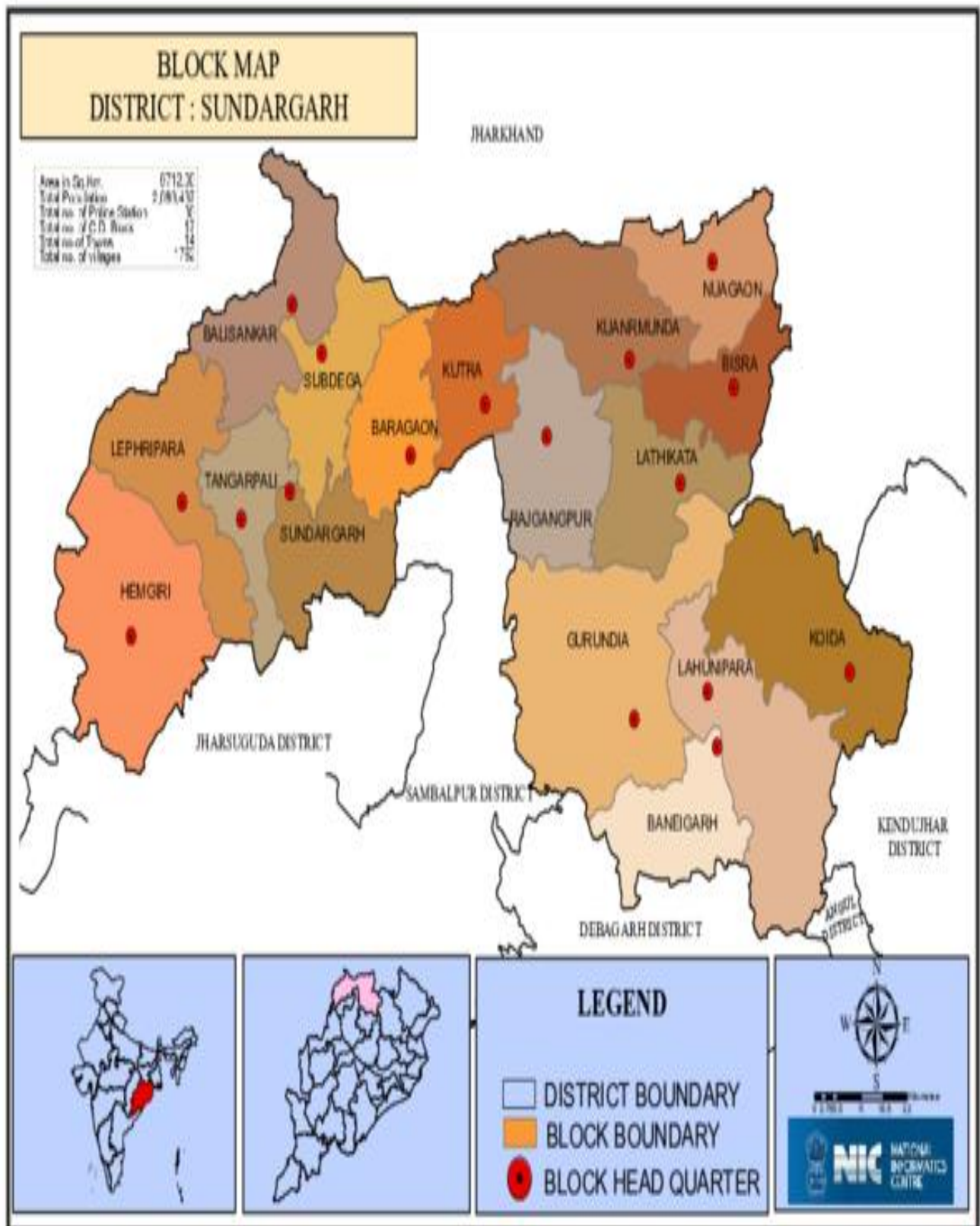
As per the 2011 Census, the total population of the district is 20,93,437, which consists of 10,61,147 (Male) and 10,32,290 (Female). The population density of the district is 216 per square. Km. and the Literacy Rate is 73.34 percent. The sex ratio of the district is 973 females per 1000 males.

1.2.4 Administration

The Collector and District Magistrate is the administrative head of the district. For the smooth running of administration, he is assisted by the Additional District Magistrate, Sub-Collector, Block Development Officers, Tehsildars, Deputy Collectors, and other Officers. Sundargarh consists of three Sub-Divisions viz. Sundargarh, Panposh and Banei. One Sub-Collector is in charge of each Sub-Division. For the convenience of revenue administration, the district is divided into 18 tehsils, namely Sundargarh, Hemgiri, Lephripara, Balisankara, Rajagangapur, Biramitrapur, Panposh, Raurkela, Banei, Tangarpali, Subdega, Baragaon, Kutra, Lathikata, Bisra, Koida, Gurundia, and Lahunipara. For the development of rural areas consisting of 1779 villages in 262 Gram Panchayats, the district is divided into 17 Community Development Blocks with one Block Development Officer in charge of each Block 17 nos. of Blocks are namely Kuarmunda, Nuagaon, Bisra, Lathikata, Hemgiri, Rajgangpur, Lephripara, Kutra,

Sundargarh, Bargaon, Subdega, Balisankara, Tangarpalli, Lahunipada, Koida, Bonaigarh, Gurundia. There are six Statutory Towns in the district, i.e, Raurkela Municipality, Sundargarh Municipality, Rajagangapur Municipality, Biramitrapur Municipality, Raurkela Industrial Township (ITS) and O.C.L. Industrial Township (ITS). To look after the developmental activities in the urban areas of the district, one Executive Officer for each of the towns has been appointed.

Fig. 1.1 Sundargarh District Map



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

Table 1.1: Socio-economic and Demographic Features of Sundargarh District	
Indicators	Values
Census 2011	
Population	20,93,437
Males	10,61,147
Females	10,32,290
Scheduled caste	191660
Scheduled Tribe	1062349
HHs	479109
Sex Ratio	973
Total Workers	873227
Main Workers	535112
Marginal Workers	18538
Non-Workers	35206
Cultivator	184273
Agricultural Laborers	253327
Literacy rate (%)	73.34
Total Geographical area (sq. km)	9,712
Land Use Pattern (Area in' 000 ha) (2018-19)	
Total Geographical Area	971
Forest	496
Land Put to Non-Agricultural Use	29
Cultivable Waste	16
Permanent Pasture and Other Agricultural Land	26
Net Area Shown	271
Cultivable Waste Land	16
Other Fellow	42
Current Fellows	42
Miscellaneous Trees and Groves	25
Agriculture, 2014-15	
Fertilizer Consumption (kg/ha)	58.98
Irrigation, Kharif ('000ha)	76551
Irrigation, Rabi ('000 ha)	37497
Other Information	
No. of Village Electrified (as on March 2017)	1762
No. of banks	275
No. of AWC	3809
Ration	46.96
<i>Source: District Statistical Handbook, SUNDARGARH, 2011 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 on the HHs surveyed. The objectives are –

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

1.4 Methodology

1.4.1. Sample Design

The multistage sampling method has been used to select the sample HHs. In the first stage, Sundargarh District has been selected purposively for the study as it is one of the 17 districts where the state Government has introduced this Programme. In the second stage, three blocks, namely Sundargarh Sadar, Baragaon and Subdega, have been selected purposively. In the third stage, two GPs from each block have been randomly selected, and in the last stage, 20 HHs from each village have been randomly selected. Therefore, for the total number of 240 HHs from twelve villages, six GPs and three blocks have been randomly selected for this study. The details have been presented in the following table.

Table 1.2 Sample Households selected in Sundargarh District		
Blocks	Program Households (N)	Sample Households (N)
Sundargarh Sadar	624	80
Baragaon	840	80
Subdega	597	80
Total	2061	240

Sources: Baseline Survey 2023

1.4.2 Data Collection, Compilation, and Analysis

A total of twelve villages were selected from three blocks, where six Gram Panchayats across three blocks were selected for data collection in the Sundargarh district for the Baseline Survey of 2023, Phase VII. These villages were selected using the simple random sampling method based on the list provided by the implementing agency about the prospective villages to be included under Phase VII across the three blocks of the district. Six Gram Panchayats were randomly selected from the block, and two villages were selected from each of these Panchayats.

This baseline survey report is based on both secondary and primary data. The primary data was collected from the respondents in the concerned districts by using a pre-tested interview schedule (Annexure 1) and Focus Group Discussion (Annexure 2). The secondary data on geographical information, population, agriculture, education, irrigation, forest and institutions have been collected by using various published and unpublished sources, including the 2011 Census.

1.5 Limitations of the 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 240 households. Secondly, there are possibilities of recall error, especially in cases involving the actual quantity of consumption and marketing, among others. Lastly, in some instances, sample households, particularly non-participant farmer households, consumed millets without producing them. This was made possible by past stock and the acquisition 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

Baseline survey, 2023 has been divided into six Chapters, including the current Introductory Chapter, which provides District Profile, Objectives, Methodology and Limitations. Chapter II provides a Socio-economic Profile of the surveyed HHs. Chapter III provides details on the Production and Productivity of Millets. Chapter IV discusses the Consumption Pattern of Millets. Chapter V Annotates on Processing and Marketing of Millets.

Chapter II

SOCIO-ECONOMIC PROFILE

2.1 Introduction

This Chapter looks into social and demographic profile of HHs surveyed that is their distribution by social group, religion, gender, age structure, education, occupation and so on. In addition, for the HHs surveyed, it provides the distribution by poverty status (proportion below poverty line and proportion above), distribution by economic activities (not mutually exclusive, as a HH can have multiple economic activities), and distribution by house structure. It also provides information about the distribution of households by their landownership and operational holdings.

2.2 Social Category

Analysis of social category composition of the sample households under the Baseline Survey 2023, Phase VII in Sundargarh district shows that majority of the sample households across the three blocks belong to Schedule Tribe (ST), comprising 73.75 per cent, followed by Other Backward Classes (OBC), which is 17.5 per cent, Schedule Castes (SC) are 6.67 per cent and General categories which account of 2.08 per cent (Fig. 2.1 & Table 2.1).

Fig 2.1: Social category among the sample HHs (in %)

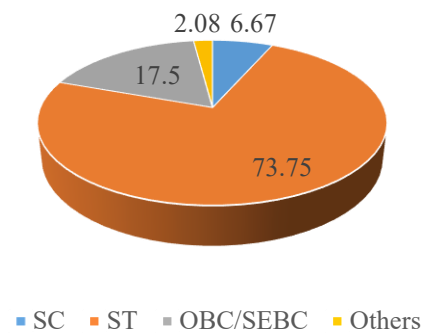


Table 2.1: Distribution of Sample HHs by their Social Category

Blocks	SC		ST		OBC/SEBC		Others	
	N	%	N	%	N	%	N	%
Sundargarh Sadar	14	17.5	31	38.75	30	37.5	5	6.25
Baragaon	1	1.25	79	98.75	0	0	0	0
Subdega	1	1.25	67	83.75	12	15	0	0
Total	16	6.67	177	73.75	42	17.5	5	2.08

Sources: Baseline Survey 2023

Similarly, block-wise distribution of households in Sundargarh Sadar reveals that about 38.75 per cent of households belong to the Scheduled Tribe (STs) category, 17.5 per cent of households belong to Scheduled Caste (SC), 37.5 per cent of households are from Other Backward Class or Educationally Backward Classes (OBCs/SEBC) and 6.25 per cent of households belong to Other Social Categories. Similarly, in Baragaon block, 98.75 per cent belong to Scheduled Tribes (STs), and 1.25 per cent belong to Scheduled Castes (SCs). Likewise, in Subdega block, 83.75 per cent belong to Schedule Tribes (STs) and 1.25 per cent belong to Schedule Castes (SCs).

2.3 Sample Population by their Sex

Distribution of the sample population among the sample households is presented in Fig. 2.2 and Table 2.2. The survey data reveals that out of the total sample population, 469 (52.23 per cent) are male and 429 (47.77 per cent) are female.

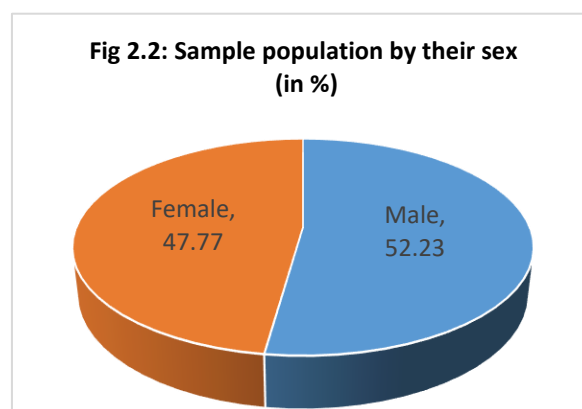


Table 2.2: Distribution of Sample Population by their Sex

Blocks	Male		Female		Total	
	N	%	N	%	N	%
Sundargarh Sadar	150	47.92	163	52.08	313	100
Baragaon	178	52.51	161	47.49	339	100
Subdega	141	57.32	105	42.68	246	100
Total	469	52.23	429	47.77	898	100

Sources: Baseline Survey 2023

Similarly, the distribution of households in Sundargarh Sadar block reveals that about 47.92 per cent are male and 52.08 per cent are female. Similarly, in Baragaon block, 52.51 per cent are male and 47.49 per cent are female. Likewise, in Subdega block revealed that about 57.32 per cent are male and 42.68 per cent are female. Comparison across the three selected Blocks female percentage is more than the male.

2.4 Marital Status of the Sample Population

The Baseline Survey (Table 2.3 & Fig. 2.3) across the three blocks, the distribution of the sample HHs by their marital status is shared. It is found that out of the total sample population, 501 (55.79 per cent) are married and 350 (38.98 per cent) are unmarried, 27 (3.01 per cent) of women are widows, 18 (2.00 per cent) of widowers are found in the sample HHs and another 1 (0.11 per cent) is living separately.

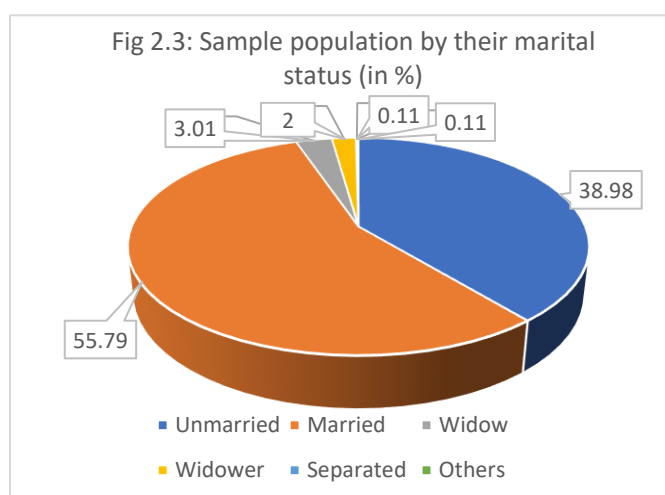


Table 2.3: Distribution of Sample Population by their Marital Status									
Sl.	Marital Status	Sundargarh Sadar		Baragaon		Subdega		Total	
		N	%	N	%	N	%	N	%
1	Unmarried	125	39.94	152	44.84	73	29.67	350	38.98
2	Married	170	54.31	168	49.56	163	66.26	501	55.79
3	Widow	13	4.15	13	3.83	1	0.41	27	3.01
4	Widower	4	1.28	5	1.47	9	3.66	18	2.00
5	Separated	1	0.32	0	0.00	0	0.00	1	0.11
6	Others	0	0.00	1	0.29	0	0.00	1	0.11
Total		313	100	339	100	246	100	898	100

Sources: Baseline Survey, 2023

As found (Table 2.3) the Block-wise distribution of households in Sundargarh Sadar block, it is revealed that about 54.31 per cent are married and 39.94 per cent are unmarried, 4.15 per cent of women are widows, and only 1.28 per cent of widowers are found in the sample HHs and 0.32 per cent are living separately. Similarly, in Baragaon block, 49.56 per cent are married and 44.84 per cent are unmarried, 3.83 per cent of women are widows, and only 1.47 per cent of widowers are found in the sample HHs. Likewise, in Subdega block, 66.26 per cent are married and 29.67 per cent are unmarried, 0.41 per cent of women are widows, and 3.66 per cent of widowers are found in the sample HHs.

2.5 Sample Population by Age Group

The age group of the population is a useful tool for social scientists, public health, and policy makers because it illustrates population trends. According to the baseline survey, adults are more than 393 (43.76 per cent) and followed by the middle age group, 205 (22.83 per cent). Similarly, block-wise distribution (Table 2.4) of Age structures in Sundargarh Sadar block reveals that about adult persons are found more, which is 135 (43.13 per cent) and followed by the middle age group, which is 75 (23.96 per cent). Likewise, in Baragaon block, adults are found more which is 140 (41.30 per cent) and followed by the middle age group, which is 82 (24.19 per cent).

Table 2.4: Distribution of sample population by their age group									
Sl.	Age Group	Sundargarh Sadar		Baragaon		Subdega		Total	
		N	%	N	%	N	%	N	%
1	Infant (0-2) years	3	0.96	2	0.59	1	0.41	6	0.67
2	Preschool (3-5) years	4	1.28	8	2.36	1	0.41	13	1.45
3	Children (6-12) years	25	7.99	31	9.14	19	7.72	75	8.35
4	Adolescents (13-18) years	35	11.18	45	13.27	24	9.76	104	11.58
5	Adults (19-44) years	135	43.13	140	41.30	118	47.97	393	43.76
6	Middle Age (45-59) years	75	23.96	82	24.19	48	19.51	205	22.83
7	Old age (60+) years	36	11.50	31	9.14	35	14.23	102	11.36
Total		313	100	339	100	246	100	898	100

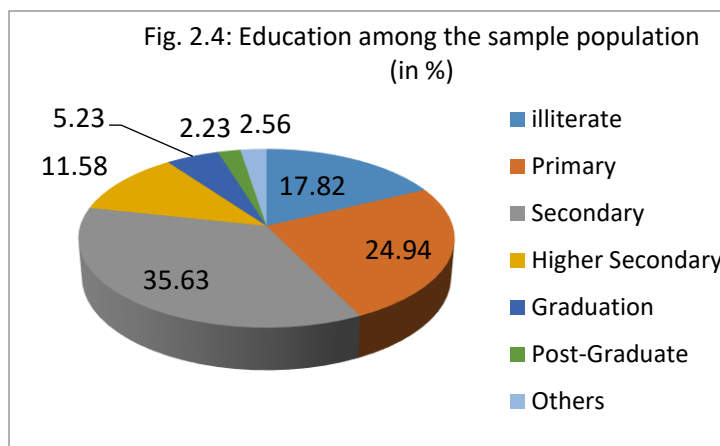
Sources: Baseline Survey 2023

2.6 Education

Education plays an important role in socio-economic development and growth. In this study, education is one of the important variables because it is a significant factor for taking up various agricultural practices and methods. Table 2.5 and Fig. 2.4 show the level of education among the sample HHs. It is found that out of the total sample population 35.63 per cent are having the secondary education and followed by primary education, which is 24.94 per cent. The illiterate is found to be 17.82 per cent. In case of higher education – it is found that out of the total, 5.23 per cent are graduate and 2.23 per cent are post-graduate. Out of the total 2.56 per cent belong to the other education like people having Diploma, Management and ITI. Similarly, block-wise status of

education (Table 2.5) in Sundargarh Sadar block reveals that, 30.03 per cent are having the primary education and it is follow by secondary education, which is 26.20 per cent. In Sundargarh Sadar, out of the total the number of illiterates is found to be 16.29 per cent. In case of higher education is too low in graduation and post- graduation is 1.20 per cent, 1.80 per cent respectively. Only 2.56 per cent

person belongs to other education like Diploma, Management ITI and so on. However, In Baragaon block reveals that; 44.84 per cent belong to secondary education and follow by primary education which is 21.53 per cent. The illiterate found 17.40 per cent. In case of higher education is too low in graduation and post- graduation is 4.13 per cent, 0.88 per cent respectively. 2.95 per cent person belongs to other education like Diploma, Management ITI and so on. Likewise, In Subdega block reveals that; 34.96 per cent belong to secondary education and follow by primary education which is 23.17 per cent. The illiterate found 20.33 per cent. In case of higher education is too low in graduation and post-graduation is 6.39 per cent, 3.19 per cent, respectively. 2.56 per cent of people belongs to other education like Diploma, Management and ITI.



Sl.	Education	Sundargarh Sadar		Baragaon		Subdega		Total	
		N	%	N	%	N	%	N	%
1	Illiterate	51	16.29	59	17.40	50	20.33	160	17.82
2	Primary	94	30.03	73	21.53	57	23.17	224	24.94
3	Secondary	82	26.20	152	44.84	86	34.96	320	35.63
4	Higher Secondary	48	15.34	28	8.26	28	11.38	104	11.58
5	Graduation	20	6.39	14	4.13	13	5.28	47	5.23
6	Post-Graduate	10	3.19	3	0.88	7	2.85	20	2.23
7	Others	8	2.56	10	2.95	5	2.03	23	2.56
Total		313	100	339	100	246	100	898	100

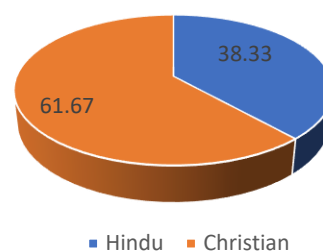
Source: Baseline Survey 2023

2.7 Religion

Religion is a social institution; it includes beliefs and practices that serve the needs of society. The Baseline study has found (Fig. 2.5 & Table 2.6) that out of the total 38.33 per cent are Hindus and 61.67 per cent are Christians. As found (Table 2.6) most of the people, 86.25 per cent are Christians in Subdega block and another 98.75 per cent are from Baragaon block. Likewise, 13.75 per cent are Hindus in Subdega Block and 1.25 per cent are from Baragaon.

Moreover, all 80 sample HHs belong to the Hindu religion in Sundargarh Sadar Block of Sundargarh District.

Fig 2.5 Sample HHs by their religion (in %)



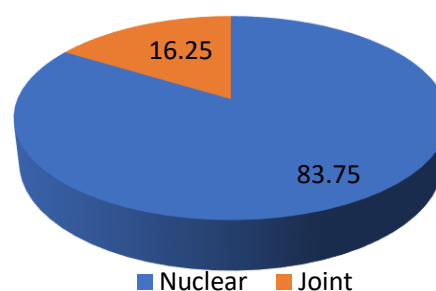
Blocks	Hindu		Christian	
	N	%	N	%
Sundargarh Sadar	80	100	0	0
Baragaon	1	1.25	79	98.75
Subdega	11	13.75	69	86.25
Total	92	38.33	148	61.67

Source: Baseline Survey 2023

2.8 Type of Family

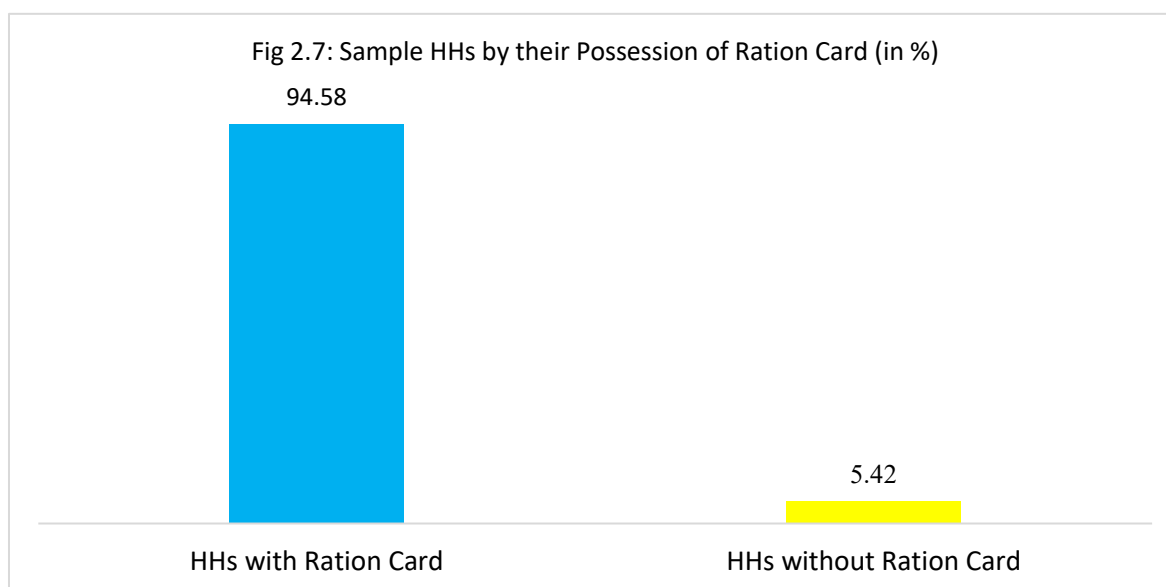
The baseline survey (Fig. 2.6 & Table 2.7) indicates that in Sundargarh district, 83.75 per cent are nuclear families and 16.25 are joint families in Sundargarh Sadra Block 80 per cent are nuclear families and 20 per cent are joint families. Similarly, in Baragaon block it is revealed that 77.5 per cent are nuclear families and 22.5 per cent are joint families. Likewise, in Subdega block, as revealed 83.75 per cent are Nuclear and 39 16.25 per cent belong to joint family.

Fig 2.6: Types of Family among the Sample HHs (in %)



2.9 Possession of Ration Card by the Sample HHs

From the field data we found that the distribution of sample households by their possession of ration cards across the three blocks of Sundargarh district out of 240 sample households (Fig. 2.7), a very significant majority, 227 HHs (94.58 per cent) of the sample households possess Ration Card.



2.10 Types of Houses among the Sample HHs

The data collected under the Baseline Survey 2023 (Fig. 2.8) reflects that out of 240 sample HHs across the three blocks in Sundargarh district, the majority (57.50 per cent) reported that they have Semi-Pucca houses, which constitute about and followed by Kutcha house (34.17 per cent), and only 8.33 per cent have Pucca houses of the total surveyed HHs. To compare across three blocks, Sundargarh Sadar has the maximum Pucca houses, which is 11.25 per cent of HHs.

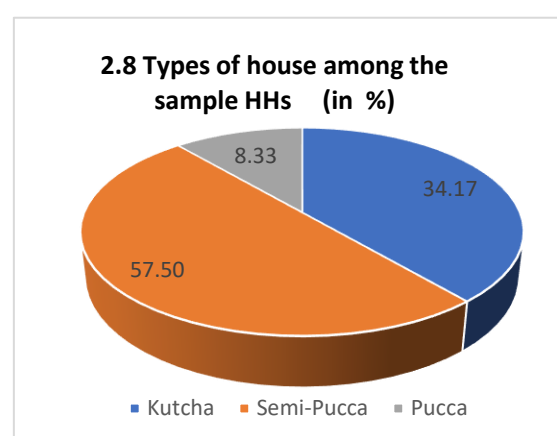


Table 2.7: Distribution of Sample HHs by their Type of House						
Blocks	Kutcha		Semi-Pucca		Pucca	
	N	%	N	%	N	%
Sundargarh Sadar	31	38.75	40	50	9	11.25
Baragaon	31	38.75	43	53.75	6	7.5
Subdega	20	25.00	55	68.75	5	6.25
Total	82	34.17	138	57.50	20	8.33

Source: Baseline Survey 2023

2.11 Occupation

The occupation determines the standard of living. Occupation affects not only lifestyle, but also life opportunities. Occupation is also important for shaping a person's attitudes and opinions. In this study, occupation is one of the important variables; for example, those who do not have a permanent source of livelihood may be more susceptible to the negative effects.

It shows that out of the total population of 898 persons, 31.74 per cent are farmers, followed by students, 23.39 per cent. While only 7.91 per cent have worked as labourers and 1.22 per cent have worked in the private sector, and 0.56 per cent were business owners, and 3.01 per cent are pension holders. Housewives make up 22.27 per cent of the population. The unemployed and others have 6.12 per cent and 2.56 per cent, respectively.

Table 2.8: Distribution of Sample HHs by their Occupation									
Sl.	Occupations/ Blocks	Sundargarh Sadar		Baragaon		Subdega		Total	
		N	%	N	%	N	%	N	%
1	Agriculture	84	26.84	107	31.56	94	38.21	285	31.74
2	Daily Labour	29	9.27	37	10.91	5	2.03	71	7.91
3	Business	3	0.96	1	0.29	1	0.41	5	0.56
4	Govt. sector	3	0.96	5	1.47	3	1.22	11	1.22
5	Private sector	3	0.96	6	1.77	2	0.81	11	1.22
6	Pension	4	1.28	5	1.47	18	7.32	27	3.01
7	Student	69	22.04	84	24.78	57	23.17	210	23.39
8	House wife	78	24.92	63	18.58	59	23.98	200	22.27
9	Unemployed	28	8.95	26	7.67	1	0.41	55	6.12
10	Others	12	3.83	5	1.47	6	2.44	23	2.56
Total		313	100	339	100	246	100	898	100

Source: Baseline Survey 2023

Similarly, from Table 2.8 we found that block-wise distribution of occupation status in Sundargarh Sadar block reveals that the total population is 313 persons, 26.84 per cent are farmers, followed by house wife 24.92 per cent. While only 9.27 per cent as labourers and 0.96 per cent are working in the private sector, as well as the business sector. While 1.28 per cent were pension holders. Students made up 22.04 per cent of the population. The unemployed and others had 8.95 per cent and 3.83 per cent, respectively. However, in the Baragaon block, the block reveals that out of the total population of 339, 31.56 per cent are farmers, followed by students, 24.78 per cent, only 10.91 per cent are labourers and 1.47 per cent are working in the private sector, as well as pension holders. While housewives made up 18.58 per cent of the population. The unemployed and others had 7.64 per cent and 1.47 per cent, respectively. Likewise, in Subdega block survey data reveals that out of the total population of 247 persons, 31.74 per cent are farmers, followed by housewives, 23.98 per cent. While only 2.03 per cent worked as a labourer and 1.22 per cent are working in the private sector and 0.41 per cent own businesses. While 7.32 per cent were pension holders. Students made up 23.17 per cent of the population. The unemployed and others had 0.41 per cent and 2.44 per cent, respectively. Among the three blocks, the unemployment rate is too low in Subdega block.

2.12 Land Ownership

Land plays a crucial role in people's livelihood. The quantity of land plays a vital role in society, and it furnishes social status to a family/person, and they are known as Jamindar (land lord), big farmer. Small farmers, marginal farmers and landless people. The primary occupation of a family depends on the quantity of land that they possess. In Table 2.9, shows that 55 per cent of households belong to small landholders and followed by marginal landholders, which is 26.67 per cent HHs. 14.58 per cent belong to medium land ownership and only 3.75 per cent are owners of large land size. The above table highlights the household land ownership status of the sample households in three blocks of Sundargarh district. In Sundargarh Sadar block, 58.75 per cent of households have small land ownership and followed by 33.75 per cent were marginal land ownership. Similarly, in Baragaon block, 50 per cent of households have small land ownership and followed by 42.5 per cent were marginal land ownership. Likewise, in Subdega block, 56.25 per cent of households have small land ownership and followed by 28.75 per cent were medium land ownership and 11.25 per cent have large land ownership.

Table 2.9: Land Ownership of the Sample HHs (in Acre)										
Blocks	Landless		Marginal		Small		Medium		Large	
	N	%	N	%	N	%	N	%	N	%
Sundargarh Sadar	0	0	27	33.75	47	58.75	6	7.5	0	0
Baragaon	0	0	34	42.5	40	50	6	7.5	0	0
Subdega	0	0	3	3.75	45	56.25	23	28.75	9	11.25
Total	0	0	64	26.67	132	55.00	35	14.58	9	3.75

Source: Baseline Survey 2023.

NB: Marginal (0-2 acre), Small (2-5 acre), Medium (5-10 acre), Large (above 10 acre)

2.13 Annual Income

Table 2.10 presents the distribution of sample households (HHs) according to their annual income across three blocks: Sundargarh Sadar, Baragaon, and Subdega. The income groups are classified into six categories, ranging from up to Rs 40,000 to above Rs 2,00,000 annually. In Sundargarh Sadar block, the majority of households 51.00 per cent fall in the Rs.40,001–Rs.80,000 income group, followed by 23.00 per cent in the Rs.80,001–Rs.1,20,000 range. A smaller proportion (9.00 per cent) reported an income between Rs.1,20,001 and Rs.1,60,000, while 5.00 per cent and 3.8 per cent are in the Rs.1,60,001–Rs.2,00,000 and above Rs.2,00,000 brackets, respectively. In Baragaon block, 46.00 per cent of the households earned between RS.40,001 and Rs.80,000, and 35per cent between Rs.80,001 and Rs.1,20,000. About 10.00 per cent reported an income of Rs.1,20,001 to RS.1,60,000, while only 2.5per cent of households fell into the Rs.1,60,001–Rs.2,00,000 and above Rs.2,00,000 categories. Similarly, in Subdega block, the distribution pattern is relatively broader. Around 28.00 per cent of the households reported an annual income between Rs 40,001 and Rs.80,000, and 25.00 per cent earned between Rs.80,001 and Rs.1,20,000. Approximately 11.00 per cent fell into the Rs.1,20,001–Rs.1,60,000 bracket, while 13.75 per cent and 16.00 per cent are in the Rs.1,60,001–Rs.2,00,000 and above Rs.2,00,000 income groups, respectively. Overall, out of all sample households, 42.00 per cent have an income between Rs.40,001 and Rs.80,000, making it the largest group, followed by 28.00 per cent earning between Rs.80,001 and Rs.1,20,000. Only 7.5.00 per cent of the households reported income above Rs.2,00,000, indicating that high-income households form a small proportion of the sample.

Table 2.10: Distribution of Sample HHs by their Annual Income (in Rs)												
Blocks	Up to Rs.40000/-		Rs 40001/- to Rs.80000/-		Rs 80001/- to Rs.120000/-		Rs.120001/- to Rs.160000		Rs 160000/- to Rs.200000/-		Above Rs.200000/-	
	N	%	N	%	N	%	N	%	N	%	N	%
Sundargarh Sadar	7	8.75	41	51.25	18	22.5	7	8.75	4	5	3	3.75
Baragaon	3	3.75	37	46.25	28	35	8	10	2	2.5	2	2.5
Subdega	5	6.25	22	27.5	20	25	9	11.25	11	13.75	13	16.25
Total	15	6.25	100	41.67	66	27.5	24	10	17	7.08	18	7.5

Source: Baseline Survey 2023

2.14 Agricultural Credit among the Sample HHs

Agriculture loans are essential financial instruments designed to support farmers in various aspects of their agricultural activities. None of the sample households in the study areas of Sundargarh district are availing of agricultural loans.

2.15 Conclusion

Most of the surveyed households in the three blocks belong to the Other Backward Category (OBC). Agriculture is the primary occupation for most of the people. From the various social and economic indicators mentioned in this chapter (including Tables and Figures) and corresponding analysis indicates that out of all 240 surveyed HHs across the three blocks of Sundargarh district majority of them possess ration cards and most of them has Pucca house.

Chapter III

PRODUCTION OF MILLETS

3.1 Introduction

This chapter attempts to shed some light on the status of millets' production and productivity, seed usage, and package of practices in Sundargarh district from the HHs surveyed in three blocks. The analysis focuses on the distribution of area under millets and other crops, seed usage and agronomic practices, and millets' production and yield in the sampled villages. The chapter also highlights the challenges and opportunities for promoting millets in the district.

3.2 Cropping Pattern

As observed in the Baseline Survey (Table 3.1) the land holdings under different crops of the sample households. Out of 240 households, it has found that all households cultivate paddy, and 8.33 per cent of households cultivate vegetables. It has also been found that millets are cultivated in a total of .25 acres in Baragaon and 0.50 acres in Sundargarh Sadar block, but have no production. Similarly, operational land holding under different crops in Sundargarh Sadar block is 13.75 per cent, cultivating vegetables, in Baragaon block it is 8.75 per cent, and in Subdega block it is 2.5 per cent.

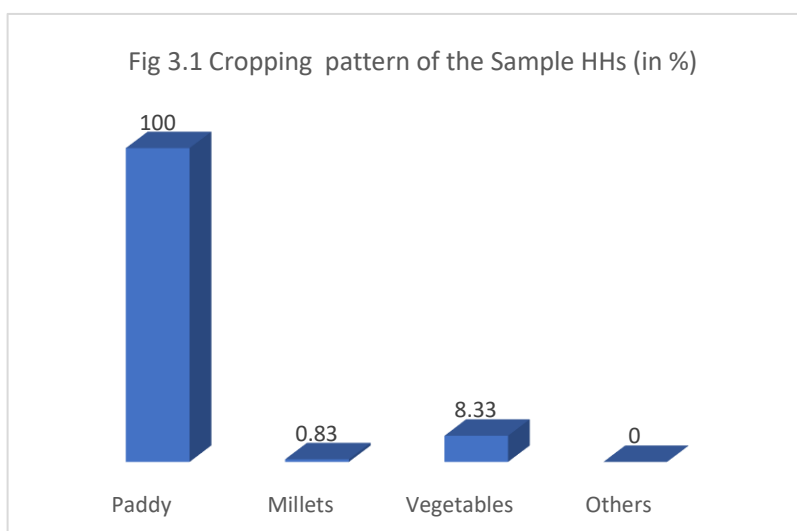


Table 3.1: Cropping pattern of the Sample HHs						
Blocks	Paddy		Millets		Vegetables	
	N	%	N	%	N	%
Sundargarh Sadar	80	100	1	1.25	11	13.75
Baragaon	80	100	1	1.25	7	8.75
Subdega	80	100	0	0	2	2.5
Total	240	100	2	.83	20	8.33

Source: Baseline Survey 2023

3.3 Annual Expenditure on different Crops

Table 3.2 highlights the average annual expenditure of different crops of the Sundargarh Sadar, Baragaon and Subdega blocks of Sundargarh district. The blocks cultivated different crops such as paddy, vegetables and so on. In terms of paddy, the total operational land is 827.00 acres and the average annual expenditure on paddy sum of Rs. 6170.34 and millets were cultivated in 0.75 acres.

Moreover, in vegetables, the total operational land is 17.5 acres and the average annual expenditure on vegetables sum of Rs.3485.71.

Table 3.2 Average Annual expenditure under different Crops in Rs.						
Particulars	Paddy		Millets		Vegetables	
	Acre	Avg.	Acre	Avg.	Acre	Avg.
Sundargarh Sadar	172.2	7352.49	0.25	1495	8.35	4191.6
Baragaon	188.55	6661.86	0.50	2158	3.75	2400
Subdega	466.25	5453.96	0	0	5.5	17000
Total	827.00	6170.34	0.75	3653	17.5	3485.71

Source: Baseline Survey 2023

3.4 Area, Production and Yield of Millets

The surveyed HHs in Sundargarh district indicated the production of millets only in the form of Mandia. As presented in Table 3.3 the total production of millets is 1 Qtls. Millets have been cultivated by 2 HHs, in .75 acres of land in the Kharif season. The yield was 1.33 quintals per acre in Sundargarh District. During the Rabi and summer seasons, not a single household cultivated millets.

Table 3.3 Distribution of HHs by Area, Production and Yield of Millets					
Particulars	Season	No of farming sample HHs	Millets cultivation Area (in Acre)	Millets Production (in Qtls.)	Yield (Qtls./Acre)
Sundargarh Sadar	Kharif season	1	0.25	0.5	2
Baragaon	Kharif season	1	0.50	0.5	1
Total		2	0.75	1	1.33

Source: Baseline Survey 2023

3.5 Types of Land

In Sundargarh district, across the three blocks (Sundargarh Sadar, Baragaon & Subdega), among the sample HHs during the Baseline Survey it is found that cultivation of millets is limited to some farmers. It is observed that only two farmers, one from Sundargarh Sadar and another from Baragaon are producing millet on a total of 0.75 acres of upper land during the Kharif season. This represents a minimal area allocated to millet production compared to other crops, such as paddy and vegetables.

3.6 Types of Millets Seed being used by the Sample HHs

As observed in the Baseline Survey 2023, the millet farming sample HHs in the sample Blocks in Sundargarh district believe that seed quality is a crucial component in both the quality and quantity of production. It is also shared by the same sample HHs that, most of the time, keeping other factors as constant, the quality of seeds usually determines the volume of production. Hence, the sample millets farmers always preserve the quality for the next crop to reap the benefits. It was revealed by the two sample Household farmers, one in each block of Sundargarh Sadar and Baragaon Block, prefer local seeds for their millet cultivation than the certified HYV seeds.

3.7 Sources of the Millet Seeds

It is also found in the Baseline Survey that across the three blocks the sample farmers prefer their own seeds for millets cultivation. It was also revealed by them that they hardly ever purchase seed either from the local market, or from the external agencies like NGOs, Govt promoted Seed Centers.

3.8 Quality of Millet Seeds

According to the sample millets farming respondents, the quality of seed is an important component of the entire production process. It is crucial for successful plant growth and crop production. The two sample farming households say that the quality of seeds they used for their millets production last year is of good quality and also shared that they need to test other seeds before adopting them.

3.9 Method of Millets Cultivation

As observed in the Baseline Survey, across the three blocks the sample households are cultivating millets by utilizing the broadcasting method while sowing seeds, rather than any other new method. As shared by them, using broadcasting method across the crops in their locality is fairly common among the farmers. They are not using other methods such as Line Transplantation (LT), Line Sowing (LS), or System of Millet Intensification (SMI) because it is totally new for them and they never saw how it is being done.

3.10 Use of Fertilizer and Pesticides

As found in the Baseline Survey, the two farmers, one from each block in the Sundargarh Sadar and Baragaon block along with their own local seeds they also used their produced organic manure as it is readily available with them and they need not have to spend. They don't ever use any pesticides or chemicals for millet cultivation as it may destroy the quality of their land.

3.11 Weeding Practices

During the Baseline Survey, it is revealed that, like other crops, they use manual weeding for their millet cultivation as it is a very common and easy method being adopted in their local area for ages. It also maintains the crop's good health and optimizes growth. Weeding manually is labor-intensive and cost-effective. They very well know that weeding manually does not destroy their crops. It also helps them to manage weeding most effectively and in the whole process, their crop receives adequate nutrients and water without having any competition from unwanted plants.

3.12 Storage of Seeds

As found in the Baseline Survey, the sample HH farmers in Sundargarh district utilize jute bags for their storage of seeds. As shared by the sample farmers, this method is chosen due to the breathable nature of jute, which helps to maintain seed health and also prevents moisture being

accumulating, thereby reducing the risk of spoilage of their seed. The sample farmers also shared that proper seed storage is crucial to ensure its proper germination, leading to higher yield.

3.13 Reasons for not Cultivating Millets

To know the major reasons for not cultivating millets was asked to the non-millets cultivating sample farmers across the three sample blocks during the Baseline Survey. As revealed (Table 3.4) most of the sample household farmers are not cultivating millets due to various reasons. As many as 115 sample HHs shared that it is not profitable (40.92 per cent), and 45 sample felt that the non-availability of millet seeds in their area (16.01 per cent) is the main reason for them for adopting millets. As many as 20 sample HHs (7.11 per cent) shared that irrigation is an issue for them. Another 101 sample HHs (35.94 per cent) observed that lack of marketing is the most difficult challenge for them,

Blocks	Not Profitable		Shortage of land		Non-availability of seed		Lack of irrigation		Others (Marketing)	
	N	%	N	%	N	%	N	%	N	%
Sundargarh Sadar	38	36.19	0	0	17	16.19	6	5.71	44	41.90
Baragaon	35	37.63	0	0	13	13.98	5	5.38	40	43.01
Subdega	42	50.60	0	0	15	18.07	9	10.84	17	20.48
Total	115	40.92	0	0	45	16.01	20	7.11	101	35.94

Source: Baseline Survey 2023

3.14 Conclusion

Farmer HHs in Sundargarh Sadar, Baragaon and Subdega blocks of Sundargarh district are engaged largely in one crop i.e. paddy. As shared by the sample HHs that paddy is the main crop for them since years and millets are found to be the second crop produced in the area and they restrict their cultivation to one season i.e. Kharif. The quality of seeds used for cultivation is perceived as good by the sample HHs and broadcasting method is being followed at large. Lack of irrigation, marketing and less profit are the major reasons for them not to prefer millets cultivation.

Chapter IV

CONSUMPTION OF MILLETS

4.1 Introduction

Demand for any product arises due to consumption. Hence, consumption plays a vital role in production and marketing. In this chapter to analyse how the households that participated in the survey vary in their millet intake across different seasons, meals, times of the day and generations. The chapter also explores the diversity of millet varieties, recipes and dishes that are consumed by these households and how they prepare them. By doing so, the chapter aims to provide a comprehensive picture of the millet consumption patterns and preferences among the sample households in Sundargarh district, which is one of the focus areas of SAA.

4.2 Consumption of Millets by the Sample HHs

As per the baseline survey Table 4.1 & Fig 4.1) millet consumption is observed in three blocks, i.e. Sundargarh Sadar, Baragaon and Subdega in Sundargarh. The district-wise distribution of millet consumption in Sundargarh Sadar, reveals that about 22.5 per cent of households consume millets. Similarly, in Baragaon block, 27.25 per cent of households consume millets and in Subdega block, 16.25 per cent of households consume millets, respectively. It is also observed that in Sundargarh Sadar, the HH level consumption is 2.65 Kg, in Baragaon Block it is 2.75 Kg, and in Subdega Block it is 2.20 Kg in the entire year. Across the three blocks, it is also found that out of the total 898 sample population, 22.08 per cent consume millets regularly.

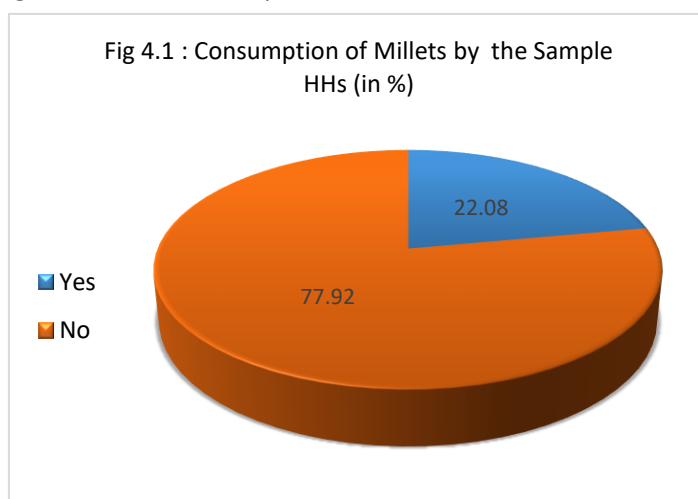


Table 4.1: Distribution of Sample HHs by Consumption of Millets				
Blocks	Yes		No	
	N	%	N	%
Sundargarh Sadar	18	22.5	62	77.5
Baragaon	22	27.5	58	72.5
Subdega	13	16.25	67	83.75

Source: Baseline Survey 2023

4.3 Millets Consumption by Age Groups

It is found in the Baseline Survey (Fig.4.2 and Table 4.2) that the distribution of millets consumption among the population in the sample households across the Sundargarh Sadar, Baragaon and Subdega blocks of Sundargarh district. It shows that the rate of millets consumption is higher among the sample adult population, which is 109 (27.73 per cent) and followed by the middle age group, which is 49 (23.90 per cent). Out of the total sample population across the three sample blocks, 18 (17.65 per cent) is consumed by the old age groups. It is also found that the rate of millets consumption among children and adolescents is 14 (13.46 per cent) and 9 (12.00 per cent), respectively.

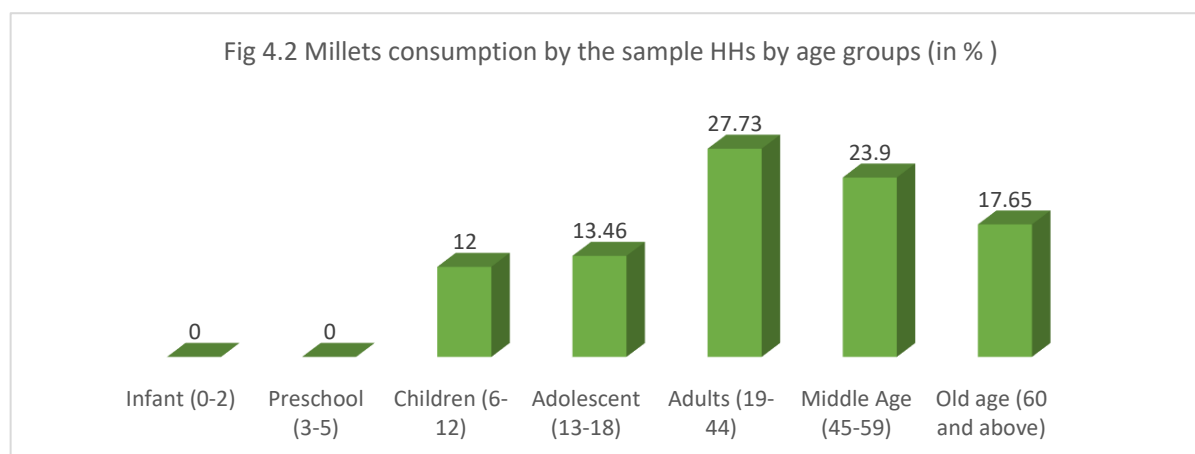


Table 4.2: Millets Consumption by the Sample HHs by Age Group												
Age Groups	Sundargarh Sadar			Baragaon			Subdega			Total		
	Population	N	%	Population	N	%	Population	N	%	Population	N	%
Infant (0-2 years)	3	0	0	2	0	0	1	0	0	6	0	0
Preschool (3-5 years)	4	0	0	8	0	0	1	0	0	13	0	0
Children (6-12 years)	25	3	12	31	6	19.4	19	0	0	75	9	12
Adolescent (13-18 year)	35	5	14.3	45	7	15.6	24	2	4.25	104	14	13.46
Adults (19-44 years)	135	36	26.7	140	46	32.9	118	27	22.9	393	109	27.73
Middle Age (45-59 years)	75	16	21.3	82	23	28.1	48	10	20.8	205	49	23.90
Old age (60 years & above)	36	7	19.4	31	8	25.8	35	3	8.15	102	18	17.65
Total	313	67	21.4	339	90	26.55	246	42	17.1	898	199	22.16

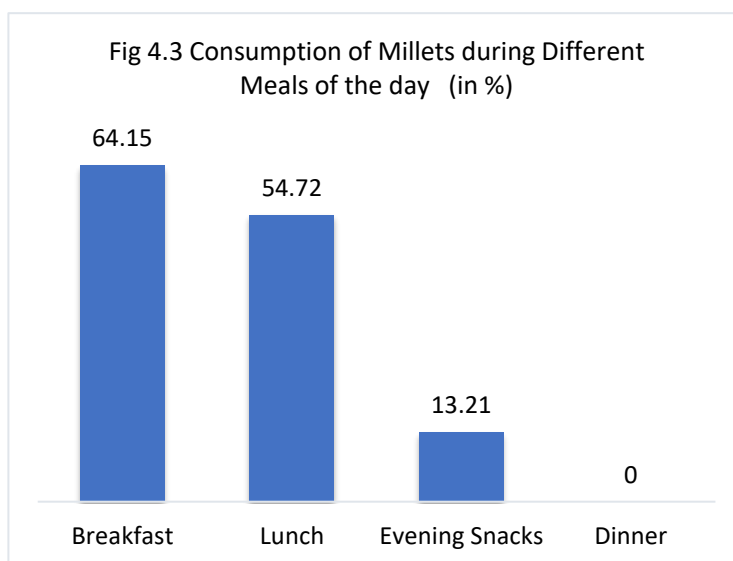
Source: Baseline Survey 2023

Similarly, as revealed (Table 4.2) consumption of millets in Sundargarh Sadar block reveals that out of the total population, 21.40 per cent consume millets in different age groups. The rate of millet

consumption is higher among the adult population, which is 26.70 per cent, and followed by the middle age group, which is 21.30 per cent. 19.40 cents consume millets by the old age groups. The rate of millet consumption among children and adolescents is 32.9 per cent and 22.9 per cent, respectively. Similarly, in Baragaon block, out of the total population, 26.55 per cent are consuming millets in different age groups. The rate of millets consumption is higher among the adult population, which is 22.9 per cent, and followed by the middle age group, which is 25.56 per cent. 8.89 cents are consumed in the old age groups. The rate of millets consumption among children and adolescents is 6.67 per cent and 7.78 per cent, respectively. Likewise, in Subdega block, out of the total population, 17.07 per cent consume millet in different age groups. The rate of millet consumption is higher among the adult population, which is 64.29 per cent and is followed by the middle age group, which is 20.8 per cent. 8,15 cent consumes millets by old age groups and the rate of millets consumption among adolescents is 4.25 per cent.

4.4 Consumption of Millets during Different Meals of the Day

Consumption of millets by HHs during different meals of the day reveals that 64.15 per cent of HHs have consumed it in their breakfast, followed by 54.72 per cent of households take in lunchtime time and 13.21 per cent of households use it as evening snacks. The following table describes the block-wise distribution of millets consumption in different meals of the day (Table 4.3 & Fig 4.3).

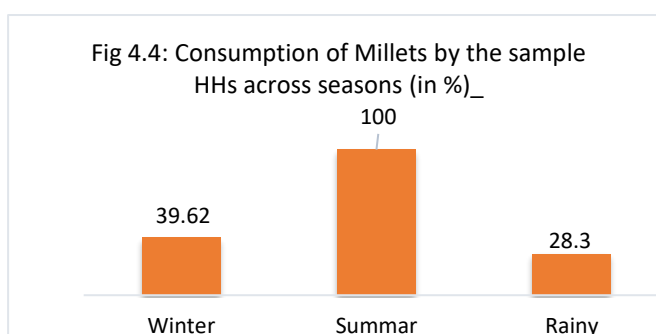


Blocks	Total Millets Consuming HHs	Breakfast		Lunch		Evening Snacks	
		N	%	N	%	N	%
Sundargarh Sadar	18	12	66.67	10	55.56	3	16.67
Baragaon	22	14	63.64	13	59.09	2	9.09
Subdega	13	8	61.54	6	46.15	2	15.38
Total	53	34	64.15	29	54.72	7	13.21

Source: Baseline Survey 2023

4.5 Millets Consumption by the Sample HHs across Seasons

Season-wise consumption of Millets patterns suggest that consumption of millets is higher in the summer season compared to the rainy and winter seasons.



Household respondents favor it more in the summer season due to the body being hydrated and also used as a summer drink. Most of the households prefer to consume millets in summer. The Baseline Survey reveals (Fig 4.4) that all the millets-consuming sample households consume it during the summer season; about 28.3 per cent and 39.62 per cent of them consume it during the rainy and winter seasons, respectively.

Table 4.4: Millets Consumption by the Sample HHs across Seasons							
Blocks	No. of HHs consuming millets	Seasons					
		Winter		Summer		Rainy	
		N	%	N	%	N	%
Sundargarh Sadar	18	8	44.44	18	100	6	33.33
Baragaon	22	7	31.82	22	100	4	18.18
Subdega	13	6	46.15	13	100	5	38.46
Total	53	21	39.62	53	100	15	28.30

Source: Baseline Survey 2023

As found (Table 4.4) millet consumption across three blocks that in Sundargarh Sadar it is revealed that all of the millets-consuming sample households consume it during the summer season, about 33.33 per cent and 44.44 per cent of them consume it during the rainy and winter seasons, respectively. Similarly, In Baragaon block reveals that all of the sample households consume it during the summer season; about 18.18 per cent and 31.82 per cent of them consume it during the rainy and winter seasons, respectively. Likewise, Subdega block reveals that all sample households consume it during the summer season; about 38.46 per cent and 46.15 per cent of them consume it during the rainy and winter seasons, respectively.

4.6 Source of the Millets being Consumed by the Sample HHs

As shared by the sample HHs during the survey (Table 4.5) that out of the total sample households, only 53 (22.05 per cent) consume millets. Out of the total sample of millet consumption, 33.96 per cent of households have consumed millets through purchasing from the market. As discussed above, two sample households are cultivating millets and keep for their consumption, and most of the households consume millets purchased from the market and other sources.

Table 4.5: Sources of Millets Consumed by the Sample Households									
Blocks	Total Sample HHs	Millets Consumption HHs		Own Production		HHs Purchased from Markets		Other sources	
	N	N	%	N	%	N	%	N	%
Sundargarh Sadar	80	18	22.5	1	5.56	12	66.66	5	27.78
Baragaon	80	22	27.5	1	4.54	17	77.27	4	18.18
Subdega	80	13	16.25	0	0	5	38.46	8	61.53
Total	240	53	22.05	2	3.77	34	64.15	17	32.08

Source: Baseline Survey 2023

4.7 Consumption of Millets Recipes

From the Baseline study, it is found that across the three sample Blocks, the sample population are consuming millets in several ways in the form of Tampo/Pitha, Khiri, Jau, Lassi and so on. Fig 4.5 shows that 39 (73.58 per cent) of HHs consume millets as a Tampo/Pitha followed by Chhatua, which is 29 (54.72 per cent). The millets recipe, such as Jau/Torani or Khiri which is 28 (52.83 per cent) and 10 (18.87 per cent), respectively. The block-wise distribution of millet consumption in different recipes is discussed in the following Table 4.6.

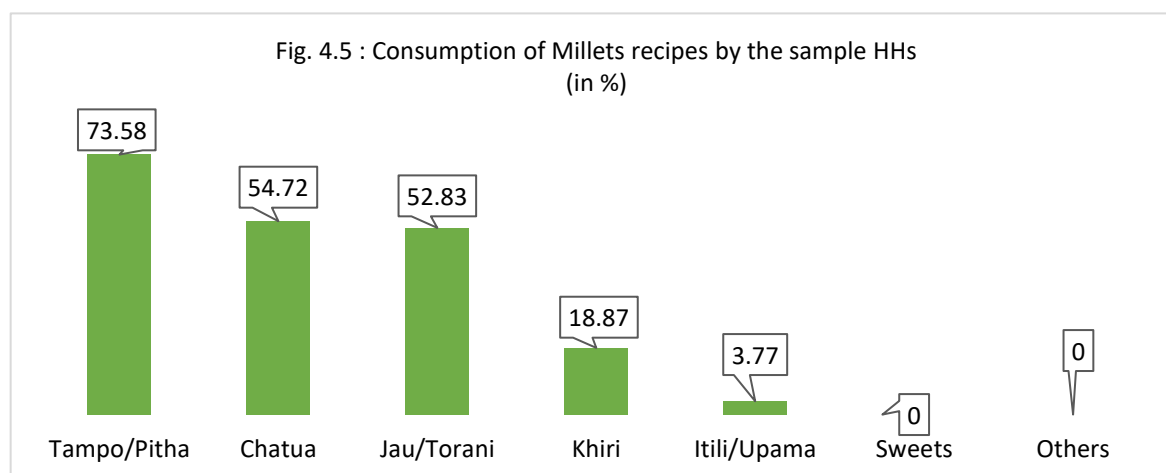


Table 4.6: Consumption of Millets recipes by the Sample HHs

Recipes	Sundargarh Sadar		Baragaon		Subdega		Total	
	N	%	N	%	N	%	N	%
Tampo/ Pitha	13	72.22	17	77.27	9	69.23	39	73.58
Chhatua	11	61.11	10	45.45	8	61.54	29	54.72
Jau/Torani	8	44.44	11	50.00	9	69.23	28	52.83
Khiri	3	16.67	4	18.18	3	23.08	10	18.87
Idli/ Upma	2	11.11	0	0	0	0	2	3.77
Sweets	0	0	0	0	0	0	0	0
Others	0	0	0	0	0	0	0	0

Source: Baseline Survey 2023

4.8 Conclusion

The trends and patterns of millet consumption among the sample households in three blocks of Sundargarh district reveal that around 22.08 per cent of the total sample households are consuming millet. While the intergenerational analysis of the rate of millet consumption among the older generation, i.e., among adults and middle-aged, is higher than other age groups. The Further, season-wise difference in the amount of millet consumption indicates that it is higher during the summer season than other seasons. All of them purchase millets from the market for their consumption. Most of the respondents consume millets during lunchtime. Jau/Torani is the most common millet recipe among the sample households in Sundargarh Sadar, Baragaon and Subdega blocks, followed by Tampo / Pitha, Khiri and Idli/Upma.

Chapter V

PROCESSING AND MARKETING OF MILLETS

5.1 Introduction

This section deals with the trends and patterns of millets processing and marketing of millets as well as millets-based products in the study area, which is based on the findings and analysis of the Baseline Survey held in Sundargarh Sadar, Baragaon and Subdega blocks of Sundargarh district. This chapter discusses the various methods are 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 the utilization of millets by the sample respondent HHs. Millet processing and marketing are essential components of transferring millet from farm to table. Processing of millets involves several steps, including ensuring that it is safe for consumption. Retaining its nutritional value is another challenge. Moreover, employing effective marketing strategies encourages more and more millet consumption as well as enhancing their incomes.

5.2 Processing of Millets

As observed in the Baseline Survey that out of the total 240 sample households, only two millet farming HHs are processing their produce for own consumption.

5.3 Method of Processing Millets

As found in the Baseline Survey, out of the total 240 studied sample HHs, only two households (one in Sundargarh Sadar and another in Baragaon block) are using traditional methods for processing their millets for their consumption. This also leaves a lot of space for the SAA to be implemented in the entire district.

5.4 Marketing of Millets by the Sample HHs

Adequate millets cultivation, adequate production and timely processing help the farmers to continue the crop. It is also true that when the millets farmer produces more than their own consumption, they usually go for marketing. In such a case, the producer has to make the right decision about and whom to sale so that it would be more and more profitable leading to more savings. However, the Study observed that in the case of all surveyed blocks of Sundargarh district, none of the sample farmers sell their produce as a raw material or as a value-added product

5.5 Millets Selling Points and Transportation

As found in the Baseline Survey, out of the total 240 sample HHs only two farmers are cultivating millets and consuming it, leaving hardly any space for selling it at the Mandi, in the local market and others. It is also shared that the sample farmers use cycle to transport their produce.

5.6 Conclusion

The effective processing and marketing of millets are crucial for enhancing its accessibility and acceptance in the market. By focusing on quality processing methods and strategic marketing initiatives, stakeholders can promote millets not only as a staple food but also as a nutritious alternative that supports sustainable agriculture and health. With the rising awareness of health and nutrition, millets have the potential to regain their status as a valued food source in diverse culinary cultures. Baseline Survey of Sundargarh district found that none of the sample households were selling millets across the three blocks. However, some households are consuming it by purchasing millets from the local market.

Annexure 1: Mapping of Baseline Survey of Sundargarh District

Sl.	Indicators	Unit	Baseline Value			
			Sundargarh Sadar	Baragaon	Subdega	Total
1	Sample households Cultivating Millets	No.	1	1	0	2
2	Types of Millets Cultivated					
	a) Mandia		1	1	0	2
3	Area under Millets/HH (Acre)	Acre	0.50	0.25	0	0.75
4	Millets Production per HHs	Qtls	0.50	0.50	0	1.00
5	Millets cultivated					
6	Package of Practice					
Kharif	a) Broadcasting		1	1	0	2
	b) LS		0	0	0	0
	c) LT		0	0	0	0
	d) SMI		0	0	0	0
Rabi	a) Broadcasting		0	0	0	0
	b) LS		0	0	0	0
	c) LT		0	0	0	0
	d) SMI		0	0	0	0
Summer	a) Broadcasting		0	0	0	0
	b) LS		0	0	0	0
	c) LT		0	0	0	0
	d) SMI		0	0	0	0
7	Yield Rate (Qtls. /Acre)	Qtl	2	1	0	1.33
8	% of HHs Consuming Millets	%				
	a) Breakfast	%	66.67	63.64	61.54	64.15
	b) Lunch	%	55.56	59.09	46.15	54.72
	c) Evening Snacks	%	16.67	9.09	15.38	13.21
	d) Dinner	%	0	0	0	0
9	Popular Millets Recipes (%HHs)					
	a) Tampo/Pitha	%	72.22	77.27	69.23	73.58
	b) Jau/Torani	%	44.44	50.00	69.23	52.83
	c) Khiri	%	16.67	18.18	23.08	18.87
	d) Idli/Upma	%	11.11	0	0	3.77
10	% of HHs using Processing Millets		0	0	0	0
	a) Manually	%	100	100	0	100
	b) Machines	%	0	0	0	0
	c) Both	%	0	0	0	0
11	% of HH Selling Millets		0	0	0	0
	a) Middleman	%	0	0	0	0
	b) Mandi	%	0	0	0	0
	c) Hat	%	0	0	0	0
	d) Money lender/ Sahukar	%	0	0	0	0
	e) Sahukar	%	0	0	0	0
12	Distress sale (% of Households)	%	0	0	0	0

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

8. 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

9. Do you cultivate millets?

1-Yes 2-No

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

If yes, give millet-wise production details

10. Whether you follow mixed farming or mono farming system? **1. Mixed 2. Mono**

If mixed, with which are the crops(s)?

11. 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)

12. Had your seed or grain got damaged during last year? **1. Yes 2. No**

13. Have you done weeding for the millets cultivation? **1. Yes 2. No**

14. If Yes, Number of times you do weeding in your millet fields, by each method?

- 1) Manually _____ 2) By Weeder _____ 3) Both _____

15. If By Weeder, Sources of weeder?

- i) Own ii) Rental iii) Borrowed from Neighbours iv) Govt. Provided v) Other

16. 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)

17. How many years have you not cultivated Millets ?

18. Do you like to cultivate Millets under this programme? **1. Yes 2. No**

Part-III: Consumption of Millets

19. 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)												

20. **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							

21. **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)								

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

1. Yes 2. No

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

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

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

1.Yes 2.No

25. 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)

26. 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

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

1.Yes 2.No

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

i). Nos. of Male members _____. ii). Nos. of Female members _____

29. How do you process the millets? a) Traditionally b) Machinery c) Both d) Others (Specify)

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

31. If Machinery, how far is the location of the processing unit from your village? _____ km

Part-V: Marketing of Millets

32. Do you sell millets? 1. Yes 2 .No
 33. Types of Millets, you Sell and Quantity

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)

34. Any instance of distress sale (less than the market price) of Millets? **1.Yes** **2.No**
 35. If yes, what is the sale price.....and what is the market price.....
 36. What are the marketing processes followed by you? a) Barter b) Money c) Others (specify)
 37. Do you sell any millet based value-added products? **1.Yes** **2.No**
 38. If yes, provide the details about the Millet Based Value Added Products you sale.
 39. Remarks

Contact no of Respondent

Signature of the Researcher/Field Investigator

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