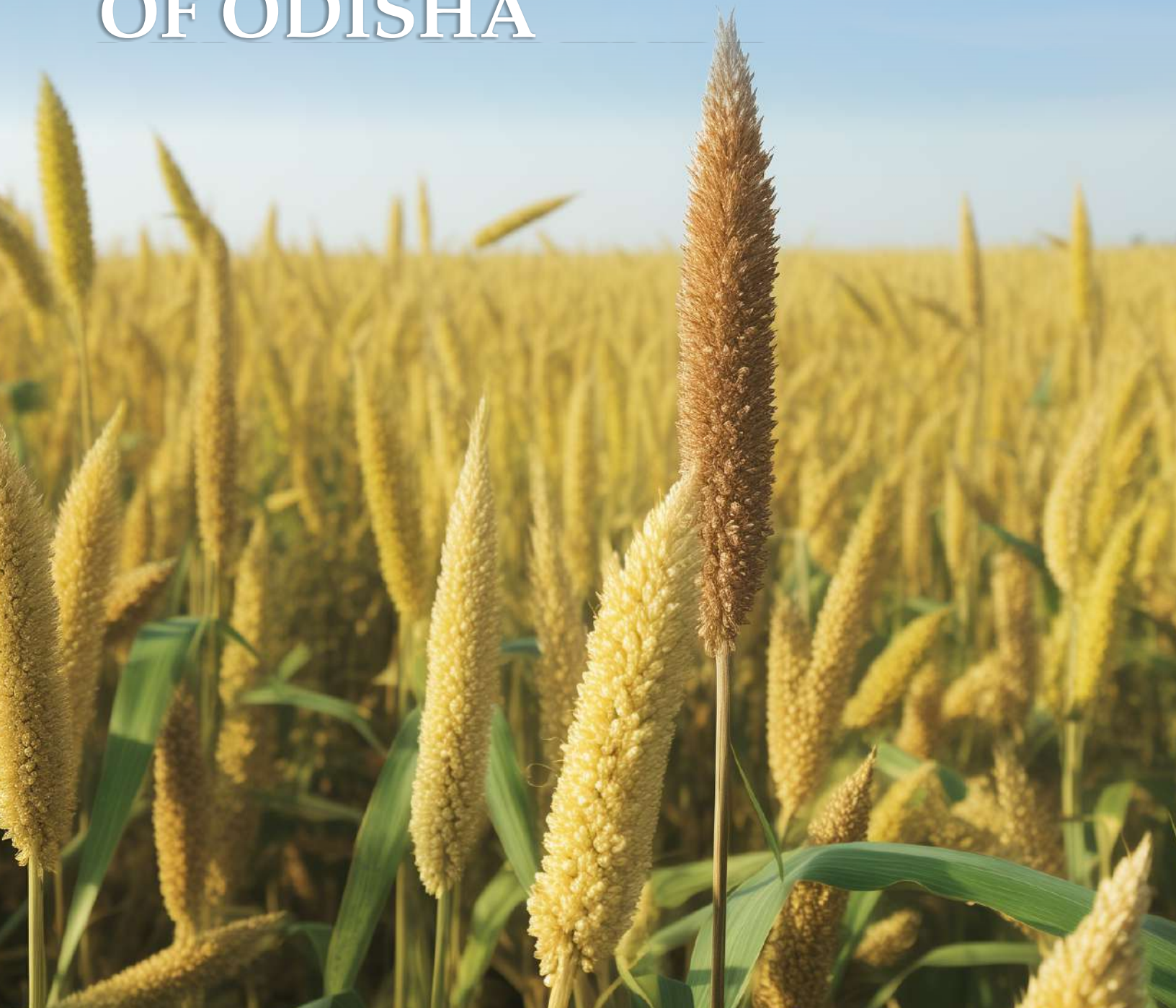




INTERNATIONAL YEAR OF
MILLETS
2023

MILLET CULTURE IN RAYAGADA DISTRICT OF ODISHA



Millet Culture in Rayagada District of Odisha

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MILLET CULTURE IN RAYAGADA DISTRICT OF ODISHA

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Preface



**Executive Director
Caritas India**

Resilience building through food system strengthening is one of the priority interventions of Caritas India. Being a national organization significantly contributing to nation-building, Caritas India had set the tone with multi-layer interventions to complement the international and national agenda to revive the traditional food systems and accordingly improve the well-being of the indigenous communities in the country. Caritas India has a long history of promoting sustainable agriculture and food security in rural communities and has recognized the potential of millet as a nutritious and sustainable crop that can help strengthen the food and nutrition status in the country. Caritas India has been working closely with smallholder farmers in rural India to promote millet-based farming practices, providing seeds, training, and technical support to promote millet cultivation.

Caritas India is actively engaged in promoting the International Year of Millets (IoYM) in India through its development programs to work towards achieving the Sustainable Development Goals (SDGs) of SDG 2, SDG 3, SDG 13, and SDG 15. Caritas India facilitates dialogues for policies and programs that support the cultivation and consumption of millets at the national level to achieve sustainable agriculture and food systems. Caritas India's efforts focus on raising awareness about the benefits of millet-based farming and the significance of preserving this traditional crop. By promoting millets,

Caritas India will demonstrate the potential of this crop in addressing food security, malnutrition, and climate change in India.

Caritas India's Global Program has taken IYoM as a platform to promote millets which are robust, tolerant crops that are adaptable to climate change and have small carbon and water footprints. Millets can endure high temperatures and grow on unfavorable soils with little to no outside assistance, which makes them perfect for a developing nation like India. The efforts are initiated to promote behavioral change practices and consumption of high micronutrient millet.

Carita's India's Global Program came up with vivid actions including campaigns, training, exchange visits, millet mapping, and studies. The study on millet culture in the Rayagada district of Odisha is one of the hand-prints actions initiated by Caritas India in line with the organizational strategy to revive the millet culture in the Global Program villages and facilitate the process of institutionalization of millets in partnership with state and district level actors and government stakeholders working in the sectors of promotion of millets. Along with identifying the potential farmers and stakeholders and scope upscaling best practices, the study brought a list of recommendations for the implementation and for improving millet promotion in the global program areas of Gudari and Bissam Cuttack in Rayagada district. The study will be a guiding document for Civil Society Organizations, government stakeholders, and nodal agencies under Millet Mission for Resilient Building initiatives.



Fr. (Dr.) Paul Moonjely

Foreword



**Asst. Executive Director
Caritas India**

Promoting indigenous traditional foods is one of the key priority areas for Caritas India. In light of the International Year of Millets in 2023, Caritas India has developed various activities to mainstream traditional food systems through ongoing programs. As part of its global program, Caritas India has conducted a study focused on analyzing the current scope of millet promotion in the SWAD Rayagada area. Given that a majority of the population belongs to poor families and relies on either the forest or seasonal migration to sustain their families, engaging in new business trends with millets can provide employment opportunities. The objectives of this study collectively aim to provide a comprehensive understanding of millet farming, promotion, institutionalization, consumption patterns, and industrial utilization. The insights gained will contribute to informed decision-making for promoting millets in the specified regions, addressing health and economic aspects.

This study generates a set of recommendations aimed at enhancing the implementation and promotion of millets in the global program regions of Gudari and Bissam Cuttack within the Rayagada district. These recommendations will serve as a foundation for developing coordinated activities in partnership with the Odisha Millet Mission and the Agriculture Department of Odisha, fostering a collaborative approach to advancing millet initiatives in the specified areas.

A handwritten signature in blue ink, reading "Fr. Jolly Puthenpura". The signature is written in a cursive style.

Fr. (Dr.) Jolly Puthenpura

SECTION I

Introduction

1.1 Background

The UN Food and Agriculture Organization (FAO) remarks Millet grows easily in dry climate, have smaller harvesting period, and require minimal water quantity (Quoted by APEDA). On the top of growing climate risks across countries in the world, millets could be a sustainable alternative to rice and wheat, as a new staple food. It can also help in providing nutrition and food security to large population in the coming years. Given the nutritional value associated with millets and its climate resilient capacity there is growing emphasis on millets consumption as well as production. Despite decreased popularity of millets during past decades, continuation of millet cultivation is reemphasized in recent years owing to its historical versatility, resilience in difficult environments, nutritional properties and health benefits, long storage life and economic potential. In order to increase millet production in the country, Govt. of India has taken several initiatives under different policies formulated from time to time. The important policies in this regard include Initiative for Nutritional Security through Intensive Millets Promotion (INSIMP) and Rainfed Area Development Programme (RADP) which are part of Rashtriya Krishi Vikas Yojana” (RKVY), and Integrated Cereals Development Programmes in Coarse Cereals based Cropping Systems Areas (ICDP-CC) under Macro Management of Agriculture (MMA). Besides, the National Mission for Sustainable Agriculture (NMSA) adopted by Department of Agriculture & Cooperation, Ministry of Agriculture Government of India in 2014, has the objective of enhancing agricultural productivity especially in rainfed areas focusing on integrated farming, water use efficiency, soil health management and synergizing resource conservation. The programme has a mandate of improving millet production in the

country. For furthering nutritional food intake through millets, the Govt. of India proposed to the United Nations (UNO) for declaring 2023 as International Year of Millets. As a result of it, The United Nations General Assembly at its 75th session in March 2021 declared 2023 the International Year of Millets (IYM 2023). FAO is the lead agency for celebrating the Year in collaboration with other relevant stakeholders.

History of millet is as old as the food history of human civilisation. There is evidence of millet cultivation in the Korean Peninsula dating back to the Middle Jeulmun Pottery Period (around 3,500–2,000BC).¹ In India, millets have been mentioned in some of the oldest Yajurveda texts, identifying foxtail millet (priyangava), Barnyard millet (aanava) and black finger millet (shyaamaka), thus indicating that millet consumption for human food is as old as Indian Bronze Age (4,500BC).² It's mentioned in the Bible as one of the grains used to make bread. In ancient China, millet was one of five sacred grains and the Chinese believed that it was brought from the heavens by Houji or “Lord Millet,” a culture hero worshiped as the founding ancestor of farming. In Europe, millet formed an important part of the daily diet during the Roman Empire, however lost relevance during Middle Ages in the name of inferior foods and poor men's foods.³ Martin Jones (2016) in his research work “Origin and Spread of Millets” notes that millets became common in North China heartland around 7500 years ago and later these millets travelled from North China to Central Asia and Europe and South through Thailand to India through nomadic shepherds.⁴

In India, different types of millets continued to be a significant part of Adivasi/tribal/ethnic communities' diets in different parts of the subcontinent until the large-scale promotion of wheat and paddy through the

¹ [https://organicsphere.in/history-of-millets-ancestors-food/#:~:text=Palaeoethnobotanists%20have%20found%20evidence%20of,%E2%80%933300%20BC\)%20in%20Korea.](https://organicsphere.in/history-of-millets-ancestors-food/#:~:text=Palaeoethnobotanists%20have%20found%20evidence%20of,%E2%80%933300%20BC)%20in%20Korea.)

² ICRISAT Official website

³ <https://foodprint.org/real-food/millet/>

⁴ Jones, Martin (2016): “ Food Globalisation in prehistory: The agrarian foundations of an interconnected continent”, Journal of the British Academy, Vol-4, PP 73-87

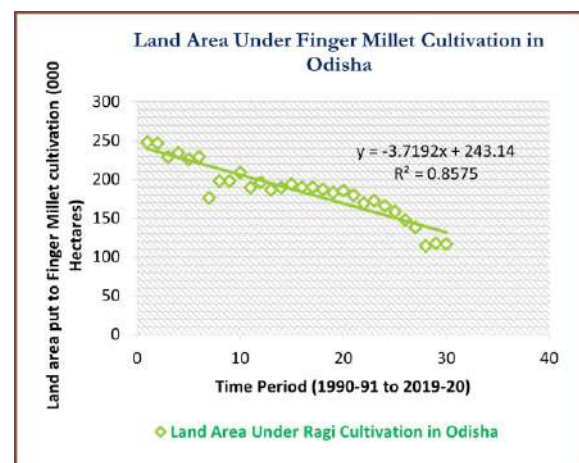
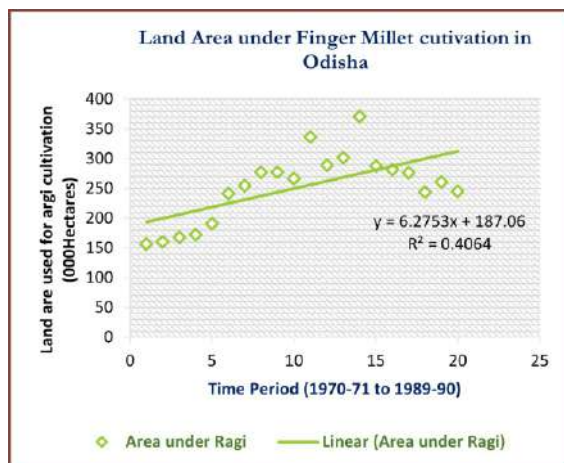
green revolution. Millets were the staple grains of large sections of the population that did not have access to assured irrigation for their lands.⁵ Considering the simple cultivation process of millets, most often millet cultivation is ridiculed as 'lazy farmer's crop' because the usual process of cultivation does not require much technical process and inputs for its fruitful harvest. Simply the seeds are broadcast and harvested after three months. Similarly, there is also social stigma associated with millet consumption as poor man's food.

Millets are nutritionally superior food which contain rich micronutrients compared to rice and wheat. Millets are rich in minerals like iron, magnesium, phosphorous and potassium. Finger millet is the richest in calcium content, about 10 times that of rice or wheat. In this fashion, nutrient to nutrient, every single millet is extraordinarily superior to rice and wheat and therefore can be considered as the solution for the malnutrition that affects a vast majority of the Indian population.

As per one report of the FAO, historically India is the largest global producer of millets. However, during last two decades, the importance of millet as food staples, has been declining in India owing to rising income of the people, growing urbanization, and government policies. More than 50.0% of the millet production is currently

finding its way into alternative uses as opposed to its consumption only as a staple.⁶ In recent years, in Europe and North America, millets are gaining prominence as staple food owing to their gluten-free and hypoglycemic properties. As per FAO data, agriculture accounts for 70% of total water consumption among these sectors. It is highest for Asia and Africa where agriculture is in primary sector of economy. Among agricultural crops, rice and wheat are staple food in large parts of globe. However, these crops like paddy and wheat are water intensive and are unlikely to be sustainable, as freshwater resources are depleting around the globe. FAO notes that Millet grows easily in dry climate, have smaller harvesting period, and require minimal water quantity (Quoted by APEDA).⁷ Millets could be a sustainable alternative to rice and wheat, as a new staple food. It can also help in providing nutrition and food security to large population in the coming years. Given the nutritional value associated with millets and its climate resilient capacity there is growing emphasis on millets consumption as well as production. Despite decreased popularity of millets during past decades, continuation of millet cultivation is reemphasized in recent years owing to its historical versatility, resilience in difficult environments, nutritional properties and health benefits, long storage life and economic potential.⁸

1.2 Trend of Millet Production in Odisha



⁵ <https://themillet.org/a-brief-history-of-millets/>

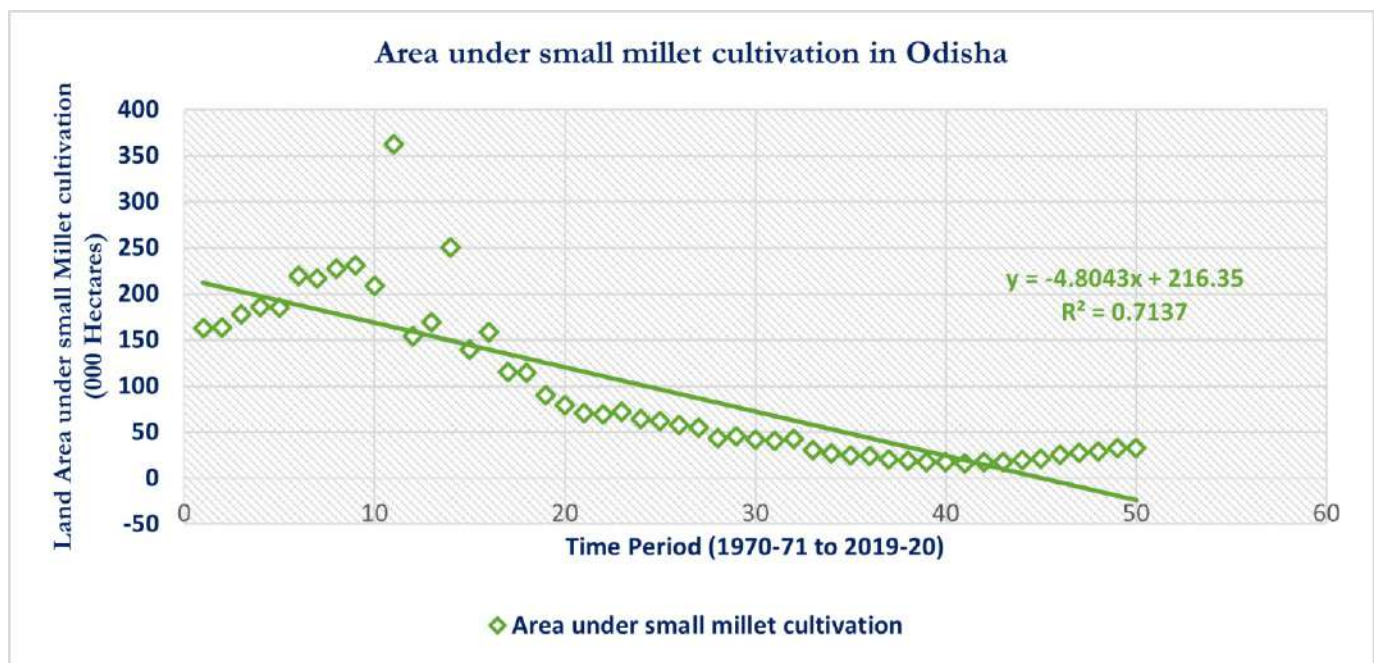
⁶ Rao, P. P. and Basavaraj, G. (2015). Status and prospects of millet utilization in India and global scenario, Millets: Promotion for Food, Feed, Fodder, Nutritional and Environment Security, Proceedings of Global Consultation on Millets Promotion for Health & Nutritional Security. Society for Millets Research, ICAR, Indian Institute of Millets Research, Hyderabad, Pp. 197-209.

⁷ https://agriexchange.apeda.gov.in/Weekly_eReport/Millets_Report.pdf, P-5

⁸ Apreti, Cristina (2012), "Nutrition and food security and Millet Cultivation in the Kumaon Region of Uttarakhand", Research Report for Gene Campaign, August 2012.

As per available statistics with the Directorate of Agriculture and Food Production, Govt. of Odisha, Finger Millet is a major millet in the state followed by minor millets. The land area under millet cultivation in the state increased during entire 1970s and 1980s. The linearly increasing trend depicts that during the twenty-year time period from 1970-71 to 1989-90, for each successive year, there was 6.27 thousand hectares of land area were added under millet cultivation. However, for the successive twenty-year time period, the trend is continuously diminishing. With each successive year during the period 1990-91 to 2019-20, there is a reduction of about 3.71 thousand hectares of millet land that are diverted for other cash crops like varieties of pulses, cashew nut, cotton etc. Similarly, there is also a secularly declining trend in the land area under small millets during last fifty years' time period ranging from 1970-71 to 2019-20. As per Govt. of Odisha statistics, during 1970s the average annual land area under Finger Millet and small millet cultivation stood at 216.53 and 197.73 thousand hectares respectively. The Finger Millet area per annum increased upto 289.38 hectares during 1980 and thereafter it is found diminishing continuously. During

the corresponding period, the land area under small millets have also steadily declined. Perhaps due to lower yield rate of small millets, in the initial phase i.e., small millet farmers have diverted land used for small millets for Finger Millets and in subsequent years, farmers have diverted much of their millet lands including Finger Millet lands for other crops. Despite increased yield rate of Finger Millet as well as small millets over time during all the last five decades, Average annual production of Finger Millet in the state has decreased from 243.79 (000 MT) in 1980s to 131.19 (000 MT) in 2010s. Annual average production of small millets in the state stood at 90.63 (000 MT) in 1980s which has decreased 12.07 (000 MT) during 2010s. Jena and Mishra (2020) in their study also finds that during the 1960s and 1970s there was an increasing trend in area and production of millets and since 1980s, there was a reversal for millets with declining in area and production. The decline started first for small millets in the 1980s and subsequently since the 1990s for the three major millets – bajra, jowar and Finger Millet. Decomposition of millets production indicated that that decline since 1980s is largely on account of area effect, but also because of yield effect in the 1990s and 2010s.⁹



⁹ Jena, Diptimayee & Mishra, Srijit (2020), "Growth, Instability and Decomposition of Millets in Odisha: 1960-61 to 2017-18", Odisha Economy Discussion Series 7, Nabakrushna Choudhury Centre for Development Studies, Bhubaneswar, September 2020

Table-1: Production Behaviour of Finger Millets (Finger Millet) and Small Millets in Odisha

Time Period	Average Annual Production of Millets (Area, Yield and Production)					
	Finger Millet			Small Millets		
	Area (000 Hectares)	Yield (Kg/Hectare)	Production (000 MT)	Area (000 Hectares)	Yield (Kg/Hectare)	Production (000 MT)
1970-71 to 1979-80	216.53	742.10	156.07	197.73	424.20	83.73
1980-81 to 1989-90	289.38	850.60	243.79	163.19	546.20	90.63
1990-91 to 1999-00	219.35	785.20	174.89	58.15	489.80	28.79
2000-01 to 2009-10	189.07	791.20	149.39	26.33	453.60	11.71
2010-11 to 2019-20	148.05	892.70	131.19	23.80	505.00	12.07
Overall (All Decades)	212.48	812.36	171.07	93.84	483.76	45.38

Source: Computed from the time series data provided in “Five Decades of Odisha Agricultural Statistics”, Directorate of Agriculture and Food Production, Govt. of Odisha (2020)

1.3 Rationale of the Study

Owing to the growing relevance of millet production and consumption, Caritas India is about to implement the Global Programme in 20 villages of Rayagada district in Odisha consisting of 10 villages of Korlaghati Gram Panchayat (GP) under Gudari block and another 10 villages of Raskola Gram Panchayat under Bissam Cuttack

block of Rayagada district. The Global programme is aimed at promoting millets in the programme villages through production, consumption and millet based micro entrepreneurship by value addition propositions. Complete list of 20 programme villages is presented in the following Chart.



The study has examined all pertinent and relevant factors for declining millet production and consumption in the project area. Based on study findings, the study has provided required way forward for the promotion of

millet production, processing, value addition and consumption in the project area.

1.4 Study Objectives

The broad objectives of the study are as per the following:

- To Map the millet farmers, types of millets cultivated by the millet farmers and proportionate share of millet lands in the overall cultivable land in the program villages.
- To analyse traditional and improved cultivation practices and its visible changes in the millet cultivation.
- To understand the history of millet production, consumption, millet processing and value addition in the programme villages
- To analyse the reach of the millet's promotion schemes (Odisha Millet Mission, Subsidy etc) and enlist those schemes and its relevance in the program villages.
- To analyse the status and scope of institutionalisation of millets (PDS, Mid-day meal, ICDS, THR) in the program blocks and Rayagada district.
- To analyse the profile the consumption pattern of millet in various kinds along with different recipes, processing and use by the communities with a special focus to promote it as a health-food to address malnutrition and morbidity.
- To know the scope for industrial utilization of millets to enhance economic threshold levels of rural livelihoods specifically in Bissam Cuttack & Gudari Block.

1.5 Study Design

The study has utilised primary data as well as secondary data. Primary data are obtained by conducting Focus Group Discussion (FGD) and Key Informant Interviews (KIIs) in relation to tribal farmer households in selected programme villages. Secondary data relating agricultural production, millet production, Millet promotion programmes etc are obtained from the published sources of the concerned Govt. Departments of Odisha. The data are quantitative as well as qualitative in nature. Wherever necessary, qualitative data are converted quantitatively as well as qualitative data quantitatively. The data are cross sectional as well as time series in nature. FGDs and KIIs are conducted in 10 sampled out programme villages in Gudari and Bissamcuttack blocks in Rayagada district.

Apart from FGD and KII, limited household survey of Millet farmers is selectively undertaken in the sampled out villages to understand the micro level millet production and consumption behaviour in the programme villages. For mapping the millet farmers in the sampled out villages, a detailed list of millet farmers is prepared. Based on mapped farmers in the sampled out villages, the total number of millet farmers of the programme area is estimated with the help of statistical extrapolation techniques.

1.6 Sample Design

The study covered 5 programme villages in each of the programme blocks Gudari and Bissamcuttack. Thus, a total 10 villages were randomly selected from both the programme blocks. In each of the selected village, FGDs involving male, female members from all social strata, were conducted by administering a pre designed FGD check list. The village level macro picture of millet history, millet production, millet consumption, millet processing, millet entrepreneurship and millet marketing etc were correctly captured through the FGD checklist. The disaggregated village level data were aggregated separately for both programme blocks and ultimately for the programme area.

The KIIs were conducted through stakeholder meetings with GP level, Block level officials of Agricultural departments, leading NGOs working in the programme area and PRI members. Apart from local knowledgeable persons were also contacted to gather millet specific information as per the overall scope of the study.

To understand the economics of crop cultivation for millet and non-millet crops, a small sample based limited household survey of millet farmers was conducted in each of the sampled out villages by administering a limited household questionnaire. The reference year for entire process of data collection was considered 2022-23 agricultural year, which is the immediately preceding year of the year field survey, i.e., 2023-24 Agricultural Year. From each of the sampled out village, 5 millet farmers were covered in the household survey. However, there was only 1 millet farmer at Sambarlendi village and no millet farmer at Brahguda and Malaguda villages under Gudari Block. So, ultimately the household survey covered 36 millet farmers for household survey. The detailed sample design of the study is as per the following table 2.

Table-1: Sample Design

Sl.	Blocks/ GP	Sampled out Villages (Simple Random sampling)	No. of FGDS	No. of KIIs (Situational Sampling)	No. of Millet farmer Households covered (Simple Random sampling)
1	Gudari Block/ Karlaghati GP	Papikhal	1	5	5
2		Sambarlendi	1		1
3		Malaguda	1		0
4		Patamguda	1		5
5		Brahguda	1		0
6	Bissam Cuttack Block/ Raskola GP	Raskola	1	5	5
7		Gangadbaju	1		5
8		Tada	1		5
9		Gunangpadar	1		5
10		Baberi	1		5
			10	10	36

1.7 Working Definitions used in the Study'



- Millet Culture: “All those activities, outputs and outcomes related with promotion of millet production, post-harvest management including consumption, processing, marketing and millet based entrepreneurship either static or dynamic in the programme villages are defined as millet culture.”
- Millet Farmers: “All those farmers of the programme

villages who used to cultivate any type of millet during last agricultural year, i.e., 2022-23 are defined as millet producers.”

- Millet Consumers: “Households in programme villages consuming any type of millet in any form whether traditional or modern in any part of the year or whole year are defined as millet consumers or millet consuming households.”
- Name of Millets used: The local names for different millets such as Finger Millet, Little Millet, Foxtail millet and Sorghum are known as madia, suan, kangu and janha respectively. The study has come across these four millets currently cultivated and consumed in the programme area.
- Programme Area: The study uses the word “programme area” which corresponds to the 20 villages planned under implementation of “Global Programme” by CARITAS India.
- Dangar Lands: By cleaning forest lands, the tribal farmers do undertake cultivation. The hill top sloppy forest lands are called dangar lands.

SECTION II

Mapping of Millet Farmers in Programme Area

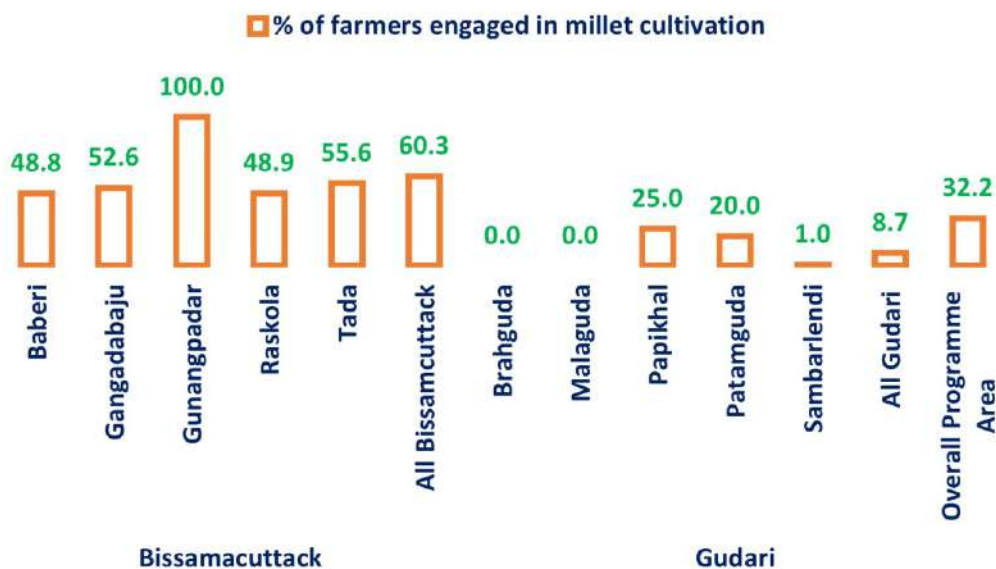
2.1. Millet Farmers

One of the key objectives of the study is to undertake mapping of the millet farmers. For this purpose, a detailed listing of all millet farmers in all the 10 villages of both programme blocks Gudari and Bissamacuttack was undertaken. In this process 117 millet farmer households in a total spread of 194 households at Bissamacuttack Block and 20 millet farmer households in a total spread of 231 households at Gudari block was traced. Incidentally, all households in all the programme villages are farmer households implying that all households were engaged in agricultural activities directly on their respective operated landholdings. As per the analysis made in table 3, despite 100 percent households' engagement in agricultural activity during the reference year, i.e., 2022-23, about 60.3 percent of farmers of Bissamacuttack block and 8.7 percent of farmers of Gudari block were involved in millet cultivation. The

incidence of millet farmers at Bissamacuttack block is about 7 times higher than Gudari block.

There is also intra block variation in millet farming. Out of the five programme villages at Gudari block, no farmer was associated with millet cultivation during last agricultural year. Similarly, at Sambarlendi village of Gudari block, no farmer was involved in millet cultivation last year. More than 20 percent of the households Papikhal and Patamguda of Gudari block were involved in millet cultivation last year. However, the situation is altogether different at Bissamcuttack block. All the households of Gunangpadar village are engaged in millet cultivation, followed by Tada (55.6%), Gangadabaju (52.6%), Raskola (48.9%) and Baberi (48.8%). The village wise variation in the incidence of millet farmers for both the blocks is shown in the chart given alongside. The list of millet farmers mapped in both programme blocks is in Annexure-I.

No. of farmers associated with millet cultivation



2.2. Millet Crops

Finger Millet, Sorghum, Little Millet, and foxtail millet are the reported millets, cultivated during the reference year by the millet farmers of Gudari block. On the other hand, Finger Millet and sorghum are the reported millets at Gudari block. The analysis suggests that along with the

decline of millet farmers at Gudari block, there has also been the decline in the presence of varieties of millets at Gudari block. The aggregated picture based on statistical extrapolation suggests that about 32.2 percent of farmers are millet farmers. Finger Millet, Sorghum, Foxtail millet and Little Millet are presently cultivated by the millet farmers of the programme area.

Table-3: Millet farmer households and type of millets cultivated by millet farmers in the sampled out villages in Rayagada district

Sl.	Blocks	Villages	No. of Households living in the village	No. of farmer households	No. of Millet Farmers	Farmer households as % to total households	Millet farmer households as % to total farmer households	Type of millets grown by the millet farmers last year (2022-23 Agricultural Year)
1	Bissamacuttack	Baberi	41	41	29	100	48.8	Finger Millet, Sorghum, Foxtail millet
2		Gangadabaju	19	19	10	100	52.6	Finger Millet, Sorghum
3		Gangadabaju	35	35	35	100	100	Finger Millet, Sorghum
4		Raskola	45	45	22	100	48.9	Finger Millet, Little Millet
5		Tada	54	54	30	100	55.6	Finger Millet, Sorghum
		All Bissamacuttack	194	194	117	100	60.3	(Finger Millet, Sorghum, Foxtail millet, Little Millet)
6	Gudari	Brahguda	14	14	0	100	0	Nil
7		Malaguda	34	34	0	100	0	Nil
8		Papikhal	60	60	15	100	25	Finger Millet
9		Patamguda	20	20	4	100	20	Finger Millet, Sorghum
10		Sambarlendi	103	103	1	100	1	Finger Millet
		All Gudari	231	231	20	100	8.7	(Finger Millet, Sorghum)
		Overall Programme Area	425	425	137	100	32.2	(Finger Millet, Sorghum, Foxtail millet, Little Millet)

2.3. Profile of Millet Farmers

The socio economic profile of millet farmers in the programme area is analysed based on limited variables including age structure, educational background, number of working members in the family and annual household income. In this section, the profile of millet farmers is discussed in a comparative setting between the two blocks under study. This is to note that Bissamacuttack block is a normal block in terms of millet cultivation and Gudari block is an abnormal block from the standpoint of millet cultivation (Details discussed in Section-3). Thus, the behaviour of socio economic profile of millet farmers of Gudari block compared to Bissamacuttack block provides a preliminary understanding about continuance or discontinuance of millet cultivation.

Age Structure: As it is depicted in table 4, majority of millet farmers are found in the age group of 20-40 years followed

by 40-60 years, upto 20 years and more than 60 years. However, comparative picture of both blocks suggests that in the higher age group, i.e., under above 60 years of age group, the incidence of millet farmers relatively higher and lower at less than 20 years of age group. Such picture at Gudari block provides a preliminary situation about the declining interest of latest young generation for millet cultivation. However, the older generation continue with some amount of millet cultivation. During interaction with villagers, it was found that generally tribal boys soon after their marriage, entrusted with the responsibility of maintaining their own family and they pursue agricultural activities as hill cultivators (dangar cultivation or upland agricultural activities through forest cleaning in sloppy forest areas). These young farmers who have recently stepped in farming occupations, have less inclination for cultivating millets rather opting for non-millet crops which are relatively high value crops.

Table-4: Age of millet farmers

Sl.	Particulars	No. of sampled out millet farmers			% of millet farmers		
		Bissamacuttack	Gudari	Total	Bissamacuttack	Gudari	Total
I	Age Group						
1	Upto 20 years	7	1	8	6.0	5.0	5.8
2	20-40 years	67	9	76	57.3	45.0	55.5
3	40-60 Year	40	7	47	34.2	35.0	34.3
4	> 60 years	3	3	6	2.6	15.0	4.4
5	Total	117	20	137	100.0	100.0	100.0
II	Educational Background by years of schooling						
1	No schooling	61	15	76	52.1	75.0	55.5
2	Upto 5 years	38	5	43	32.5	25.0	31.4
3	5-10 years	15	0	15	12.8	0.0	10.9
4	> 10 years	3	0	3	2.6	0.0	2.2
5	Total	117	20	137	100.0	100.0	100.0
III	No. of working members in the family						
1	Upto 2 members	62	3	65	53.0	15.0	47.4
2	2-4 members	45	6	51	38.5	30.0	37.2
3	4-6 members	9	8	17	7.7	40.0	12.4
4	>6 members	1	3	4	0.9	15.0	2.9
5	Total	117	20	137	100.0	100.0	100.0

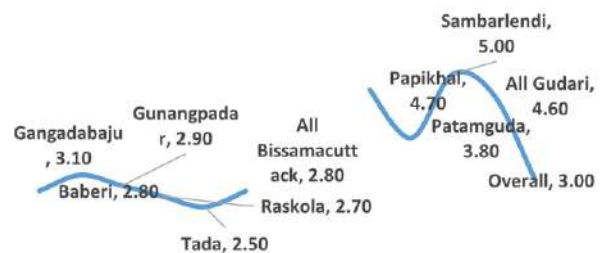
MEAN AGE OF MILLET FARMERS



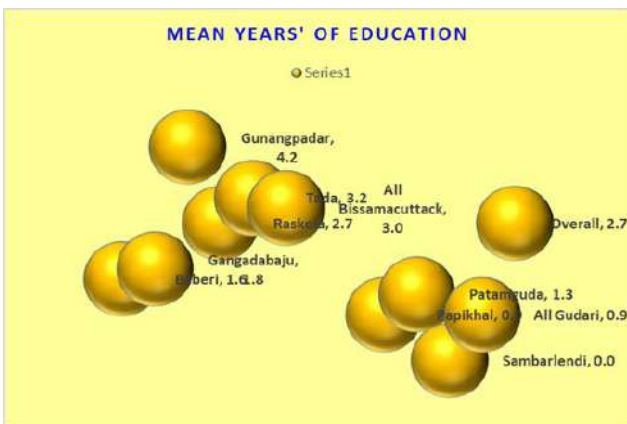
The mean age of millet farmers as calculated in table 5 further reveals that the mean age of millet farmers at 44 years in Gudari block stands higher than the same at 38.6 years in Bissamacuttack block. Out of five sampled out villages at Gudari block, millet farmers are not found at Brahguda and Malaguda villages. The mean age of millet farmers in other villages of Gudari block including Papikhal, Patamguda and Sambalendi is calculated at 39.2, 56.8 and 65 years. This indicates the age group of millet farmers is more skewed in favour of higher age group at Gudari block. On the other hand, in Bissamacuttack block, the mean age is at least not skewed towards any age structure. So, age an important attribute is influencing millet cultivation at Gudari block implying that farmers in the lower age group is slowly diverting from millet crops to non-millet based high value crops and older generation is somehow continuing millet cultivation.

of millet farmers of Bissamacuttack block and 75 per cent of them at Gudari block have no formal schooling experience. Overall, 55.5 percent of millet farmers have no schooling experience. About 31.4 percent of millet farmers have education up to five years of schooling. Remaining 13.1 percent of millet farmers have higher education beyond five years of schooling (table-4). As millet farming is generally pursued more by elder generation and young generation is not very much motivated for millet cultivation, so, obviously the educational background of millet farmers is skewed towards relatively lower formal educational background. The mean years of education at Bissamacuttack is calculated at 3 years which is relatively lower at Gudari block at 2.7 years (table-5). As per interactions with farmers, it was revealed that the young age farmers are generally interested to cultivate crops like cashew nut, cotton, cow peas which generally provide relatively higher cash inflow to households. Considering that educated youth are slowly being diverted from millet crops to cash crop cultivation, there should be awareness programmes targeting the youth population regarding sustainable agriculture and the importance of millets in sustainable agriculture.

NO. OF WORKING MEMBERS PER MILLET FARMER HOUSEHOLD



MEAN YEARS OF EDUCATION



Educational Background: Majority of millet farmers in both the blocks have no schooling. About 52.1 percent

Working members in the family: As it is reflected in table 4, relatively a higher chunk about 47.4 percent of millet farmer households is having 2 working members followed 2-4 members among 37.2 percent. Overall, these two groups jointly account around 84.6 percent, which is around 91.5 percent at Bissamacuttack block and 45 percent at Gudari block. As it is already analysed in table-3, incidence of millet farmers is almost double at Bissamacuttack block than that of Gudari block, so



taking note of Bissamacuttack family labour data, it may be stated that millet farming is more skewed in favour of families having lesser number of working members. Compared to other crops, there is less labour intensity in cultivating millet crops. Perhaps small working member families take it advantageous to go for millet cultivation. The average of family members is calculated at 2.8

members at Bissamacuttack block and 3 members at Gudari block (table-5). The analysis suggests that if there are fewer number of working members in the family, such families after due identification can be motivated for undertaking millet cultivation for household economic benefits.

Table-5: Age, Education and Family Workers among Millet Farmer Households

Sl	Blocks/Villages	Average of Age	S.D.	Mean Education (Years of schooling)	S.D.	No. of family workers/ Millet Farmer Household	S.D.
Baberi							
1	Baberi	46.9	9.3	1.6	3.0	2.8	1.1
2	Gangadabaju	41.7	6.1	1.8	2.3	3.1	1.1
3	Gunangpadar	30.7	10.6	4.2	4.4	2.9	1.6
4	Raskola	34.8	7.5	2.7	3.3	2.7	1.1
5	Tada	44.2	11.6	3.2	3.4	2.5	0.9
	Sub Total	38.6	11.7	3.0	3.7	2.8	1.2
Gudari							
6	Brahgida	-	-	-	-	-	-
7	Malaguda	-	-	-	-	-	-
8	Papikhal	39.2	11.4	0.9	1.8	4.7	1.8
9	Patamguda	56.8	19.4	1.3	2.5	3.8	1.7
10	Sambarlendi	65.0	-	0.0	-	5.0	-
	Sub Total	44.0	15.2	0.9	1.8	4.6	1.7
	Overall	39.4	12.3	2.7	3.5	3.0	1.4



Household Income: The annual household income of millet farmer households from all sources and exclusively from agricultural sources is calculated separately for both the blocks. As per table 6, it is found that overall

agricultural income constitutes 69.2 percent of the total annual household income from all sources. This ratio is found at 69.6 percent at Bissamcuttack block and 66.7 percent at Gudari block. In villages like Gunangpadar and Tada under Bissamcuttack block, the said ratio is still higher. Agricultural income as percentage to total annual household income is a good indicator to ascertain occupational diversity. Based upon this indicator, it can be stated that the occupational diversity at Gudari block is marginally higher than that of Bissamcuttack block. The incidence of millet cultivation is lower at Gudari block, and there is also relatively more occupational diversity. Thus, millet cultivation by farmers stands in reverse relationship with occupational diversity. However, the difference of this ratio between two blocks is not sharp, rather the ratio is slightly lower at Gudari block.

Table-6: Annual Household Income of millet farmers

Sl.	Blocks/ Villages	Annual Household Income/ Millet Farmer Household (Rs.)				
		All Sources	S.D.	Agricultural source	S.D.	Agricultural income as % to HH Income
Bissamcuttack						
1	Baberi	27600	6081.9	18800	4652.1	68.1
2	Gangadabaju	26900	4067.5	17500	4352.5	65.1
3	Gunangpadar	26371.4	6508.3	19685.7	5256.8	74.6
4	Raskola	30500	10107.8	19772.7	5943.6	64.8
5	Tada	26700	5160.5	18766.7	4546.2	70.3
	All Villages	27487.2	6870.2	19128.2	5013	69.6
Gudari						
6	Brahgida	-	-	-	-	-
7	Malaguda	-	-	-	-	-
8	Papikhal	27066.7	7166.1	18200	4427.2	67.2
9	Patamguda	32750	9142.4	21250	6075.9	64.9
10	Sambarlendi	22000		15000		68.2
	All Villages	27950	7639.8	18650	4749.2	66.7
	Overall	27554.7	6959.9	19058.4	4961.3	69.2

SECTION III

Changing History of Millet Cultivation in the Programme Area

This section deals with the dynamics of millet cultivation over time by analysing historical data about millet production in the programme area. The history of millet production is analysed based on the time series trend of millet production. The analysis mainly draws upon the quantitative as well as qualitative data obtained from FGDs conducted at village level and KIIs conducted with various stakeholders directly in contact with the programme area households.

3.1. Trend of Millet Farmers

For analysing the trend of millet farmers, number of millet farmers in each of the sampled out programme villages during last 15 years is taken into consideration. As per table 7, it is depicted that at present overall 32.2 percent of farmers are associated with millet cultivation, which is about 60.3 percent at Bissamacuttack block and

8.7 percent at Gudari block. More than 10 years back around 97.6 percent of farmers of Bissamacuttack block were engaged in different varieties of millet cultivation which came down to 92.3 percent during 10 years' back situation corresponding to 2012-13 agricultural year, which further declined to 77.3 percent during five years back situation corresponding to 2017-18. Similarly, at Gudari block also, during last 15 years, the number of farmers cultivating millet has declined from 95.2 percent to 8.7 percent during the corresponding period. The fall in the number of millet farmers at Gudari block is much faster than Bissamacuttack block. Considering the overall programme area encompassing both the blocks, the decline is from 96.2 percent during more than 10 years back to 32.2 percent in 2022-23. Gunangpadar under Bissamacuttack block is an exceptional village, where consistently all farmers are linked with millet cultivation over time.

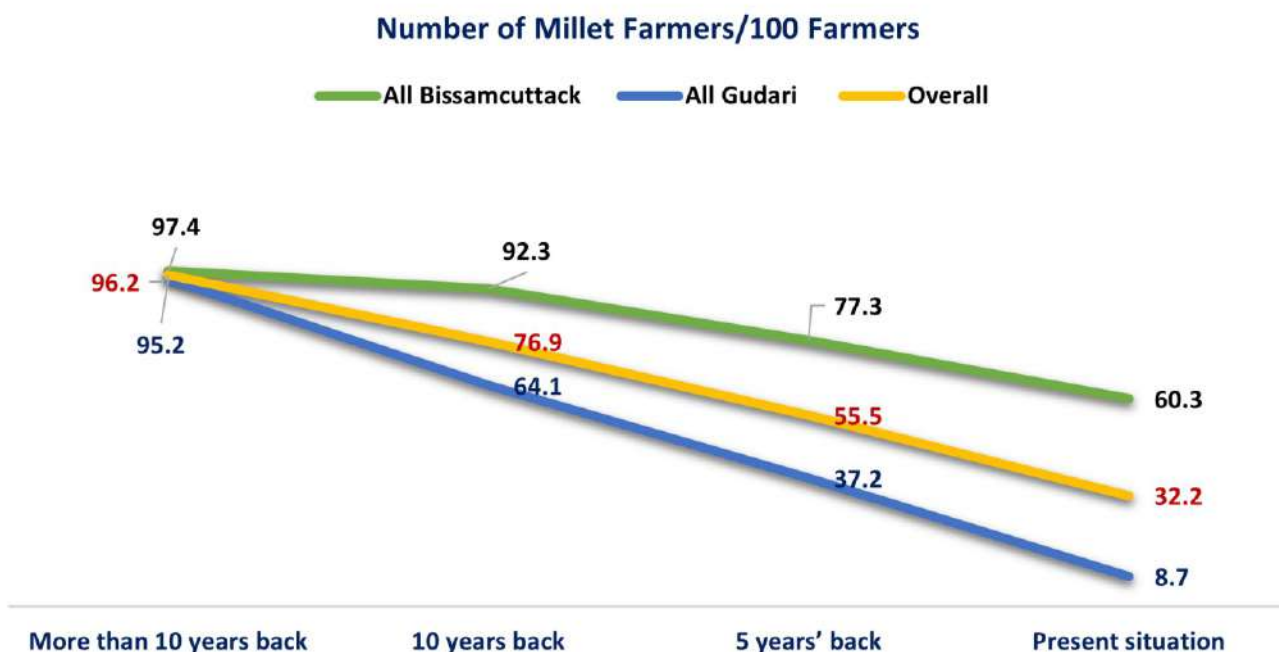
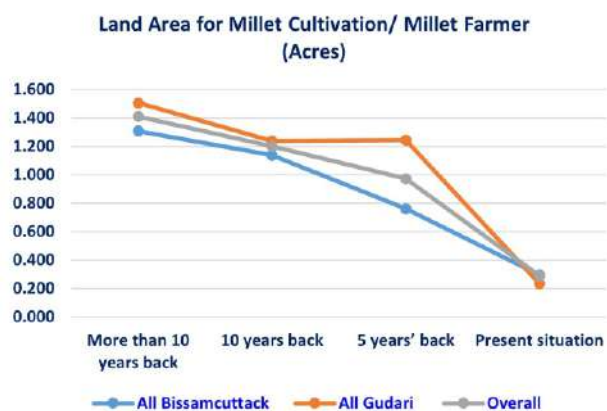


Table-7: Farmers' involvement in millet cultivation

Sl.	Blocks	Villages	No. of millet farmers				No. of millet farmers / 100 farmers			
			Present situation	5 years' back	10 years back	More than 10 years back	Present situation	5 years' back	10 years back	More than 10 years back
1	Bissamacuttack	Baberi	20	30	40	40	48.8	73.2	97.6	97.6
2		Gangadabaju	10	15	19	19	52.6	78.9	100.0	100.0
3		Gunangpadar	35	35	35	35	100.0	100.0	100.0	100.0
4		Raskola	22	30	35	45	48.9	66.7	77.8	100.0
5		Tada	30	40	50	50	55.6	74.1	92.6	92.6
		All Bissamacuttack	117	150	179	189	60.3	77.3	92.3	97.4
6	Gudari	Brahguda	0	6	8	10	0.0	42.9	57.1	71.4
7		Malaguda	0	10	20	30	0.0	29.4	58.8	88.2
8		Papikhal	15	30	50	60	25.0	50.0	83.3	100.0
9		Patamguda	4	10	20	20	20.0	50.0	100.0	100.0
10		Sambarlendi	1	30	50	100	1.0	29.1	48.5	97.1
	All Gudari	20	86	148	220	8.7	37.2	64.1	95.2	
	Overall (both blocks)		137	236	327	409	32.2	55.5	76.9	96.2

3.2. Trend of Millet Area



The change in the land area put under millet cultivation per millet farmer as analysed in the following table 8

reveals that over last 15 years or so, there has been a continuously declining trend of land area under millet per farmer in both programme blocks Bissamacuttack and Gudari. Overall, it is observed that two decades back, i.e., during the period 1990 to 2000, the land area used for millet cultivation by each of the millet farmer was 1.411 acres, which has come down by around 5 times during last 25 years and now during 2020s, the millet area per farmer is 0.287 acres. During the corresponding period, it has come down from 1.307 acres to 0.296 acres in Bissamacuttack blocks and in from 1.506 acres to 0.233 acres in Gudari block. During field study it was elicited by the millet farmers, as millet consumption is their traditional food habit, so, they are mostly cultivating millets for self-consumption only rather than creating any marketable surplus. So, the millet farmers are in the process of continuous substitution of millet lands for non-millet and high value cash crops. In recent years majority of millet lands are alternatively used for growing

cotton, cashew nut and cowpeas. This is to note that tribal people have their own lands and at the same time encroached dangar lands. The dangar lands are mostly used for millet cultivation. Now-a- days, even a sizable

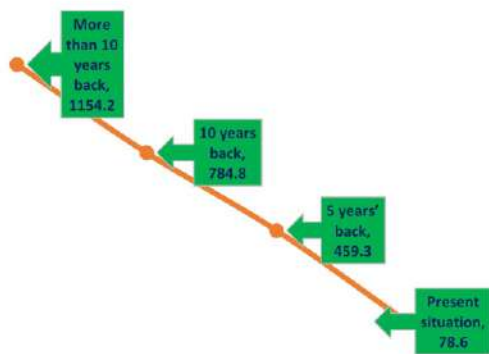
fraction of dangar lands are diverted for non-millet cash crops. The trend of millet area per farmer for both the blocks is highlighted in the chart given alongside.

Table-8: Millet area / Farmer (Acres)

Sl.	Blocks	Villages	Millet area/ Farmer (Acres)			
			Present situation	5 years' back	10 years back	More than 10 years back
1	Bissamcuttack	Baberi	0.020	0.050	0.200	0.400
2		Gangadabaju	0.030	0.070	0.500	1.000
3		Gunangpadar	0.200	0.400	0.800	1.200
4		Raskola	0.200	0.400	0.800	1.000
5		Tada	0.750	1.000	1.500	1.750
		All Bissamcuttack	0.296	0.761	1.138	1.307
6	Gudari	Brahguda	0.000	0.250	0.500	1.000
7		Malaguda	0.000	0.250	0.500	1.000
8		Papikhal	0.010	0.250	0.350	0.500
9		Patamguda	1.000	1.500	1.750	2.000
10		Sambarlendi	0.500	0.750	1.000	1.500
		All Gudari	0.233	1.243	1.238	1.506
	All Villages under both blocks		0.287	0.973	1.200	1.411

3.3. Trend of total Millet Area

Total estimated land area under millet cultivation in all 20 programme villages (Acres)

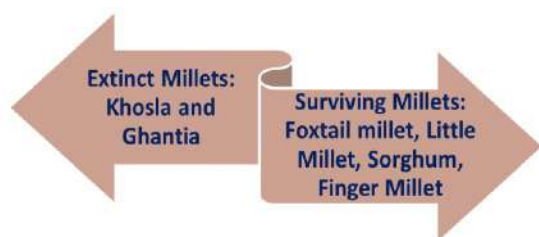


Total millet area in all of 20 programme villages is estimated by extrapolating total millet area data of sampled out villages. The total area data for each of the programme villages is estimated by multiplying number of millet farmers with land area under millet cultivation per farmer. In this process, it is found that 78.6 acres of land area were used for millet cultivation in all the 20 programme villages in 2022-23. More than 10 years back, millet area in all programme villages stood at 1154.2 acres which came down to 784.8 acres in 2012-13 and 459.3 acres in 2018-19. This amounts to state that there has been a steep fall in the total amount of land used for millet cultivation in the programme villages. The falling trend of total land area under millet cultivation can be glanced from the chart given alongside.

Table-9: Trend of total area under millet cultivation by all millet Farmers

Sl.	Blocks	Villages	Total land area under millet cultivation (Acres)			
			Present situation	5 years' back	10 years back	More than 10 years back
1	Bissamacuttack	Baberi	0.4	1.5	8.0	16.0
2		Gangadabaju	0.3	1.1	9.5	19.0
3		Gunangpadar	7.0	14.0	28.0	42.0
4		Raskola	4.4	12.0	28.0	45.0
5		Tada	22.5	40.0	75.0	87.5
		All Bissamcuttack	34.6	114.2	203.7	247.0
6	Gudari	Brahguda	0.0	1.5	4.0	10.0
7		Malaguda	0.0	2.5	10.0	30.0
8		Papikhal	0.2	7.5	17.5	30.0
9		Patamguda	4.0	15.0	35.0	40.0
10		Sambarlendi	0.5	22.5	50.0	150.0
		All Gudari	4.7	106.9	183.2	331.3
	All 10 Villages under both blocks		39.3	229.6	392.4	577.1
	Estimated value for all 20 programme villages in both the blocks		78.6	459.3	784.8	1154.2

3.4. Type of Millets



As per the statements recorded in table 10, it is revealed that over time, some of the millets like Khosala and Ghantia are found to have been extinct in the programme villages. In Gudari block, Little Millet and kangoo are also found extinct. The surviving millets at Bissamacuttack block include Finger Millet, Little Millet, Sorghum and foxtail millet. Extinct of Khosla and ghantia like millets in the study area is attributed to the gradually diminishing

importance of such crops in regular food habits of tribal people. The tribal food habit like any other people have undergone changes over time. So, in the process of revealing choices for alternative foods, most popular millets in tribal platters have survived and few other least popular millets as extinct over time.

Tribal people have typical habit of seed storage and management. They are not habituated of purchasing seeds from the market. As per their requirement, they preserve seeds in earthen pots for the forthcoming agricultural season, else they borrow seeds or exchange seeds from the fellow farmers within their village or neighbouring villages. This system storage and usage of seed is very much traditional practice among tribal farmers since generations. In this case, the khosala and ghantia seeds are no longer preserved by them for which these two millet crops have been reported as extinct.

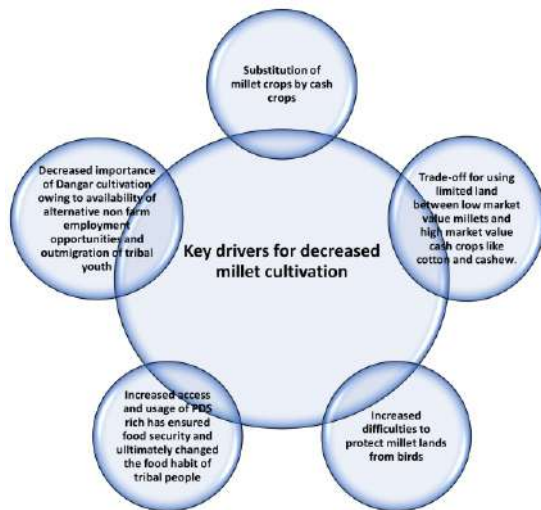
Table-10: Type of millets cultivated

Sl.	Blocks	Villages	Type of millets cultivated			
			Present situation	5 years' back	10 years back	More than 10 years back
1	Bissamacuttack	Baberi	Finger Millet, Sorghum, Foxtail millet	Finger Millet, Sorghum, Foxtail millet, Khosla	Finger Millet, Sorghum, Foxtail millet, Khosla	Finger Millet, Sorghum, Foxtail millet, Khosla
2		Gangadabaju	Finger Millet, Sorghum	Finger Millet, Sorghum, Saun	Finger Millet, Sorghum, Little Millet, Kangoo	Finger Millet, Sorghum, Little Millet, Kangoo
3		Gunangpadar	Finger Millet, Sorghum	Finger Millet, Sorghum, Kangoo	Finger Millet, Sorghum, Kangoo Little Millet	Finger Millet, Sorghum, Little Millet, Kangoo Ghantia
4		Raskola	Finger Millet, Little Millet	Finger Millet, Little Millet	Finger Millet, Little Millet, Khosla	Finger Millet, Little Millet, Khosala, Ghantia
5		Tada	Finger Millet and Sorghum	Finger Millet, Sorghum, Saun	Finger Millet, Sorghum, Little Millet, Kangoo	Finger Millet, Sorghum, Little Millet, Kangoo, ghantia
6	Gudari	Brahguda	Not found	Finger Millet, Sorghum	Finger Millet, Sorghum, Foxtail millet	Finger Millet, Sorghum, Kangoo, ghantia
7		Malaguda	Not found	Finger Millet, Sorghum	Finger Millet, Sorghum, Foxtail millet	Finger Millet, Sorghum, Little Millet, Kangoo
8		Papikhal	Finger Millet	Finger Millet, Sorghum	Finger Millet, Sorghum, Foxtail millet	Finger Millet, Sorghum, Little Millet, Kangoo, ghantia, Khandia
9		Patamguda	Finger Millet, Sorghum	Finger Millet, Sorghum, Foxtail millet	Finger Millet, Sorghum, Foxtail millet, Khosla	Finger Millet, Sorghum, Foxtail millet, Khosla
10		Sambarlendi	Finger Millet	Finger Millet, Sorghum	Finger Millet, Sorghum, Foxtail millet	Finger Millet, Sorghum, Foxtail millet

3.5 Factors influencing diminishing millet cultivation

Owing to several demand side as well as supply side factors, there has been continuous declining trend of millet production. Due to easy availability of other food

items including PDS supported rice, millets have been substituted by rice, which are almost free of cost as provided through PDS @4 Kg/ household member per month. Similarly with respect to supply, as demand is declining, farmers do not accord priority to millet production. Like any other society, in tribal society also,



there has been continuous increase in the demand for aspirational goods like smart phones, motor bikes, pucca houses etc. for which they need better income opportunities. Resultingly, they are shifting emphasis to cash crops and crop diversification. With this objective, in recent years, they have adopted cashew and cotton cultivation. Farmers obviously interested for other agricultural crops which provide them better income. Almost all farmers have massively undertaken cowpeas cultivation. Farmers who have not adopted either cashew nut or cotton cultivation, they have massively undertaken cow-peas cultivation. These three crops are predominantly substituted for millet cultivation. Farmers

prefer to high value cash crops instead of unremunerative millets crops. Other millets are almost at the verge of extinction in Rayagada district. Increased emphasis for cash crops and competition of different crops for limited agricultural land at the disposal of a tribal farmer, have pushed farmers to forego millet cultivation. Productivity of cotton is about 10 to 12 quintals in plain lands and about 8 quintals in dangars (hills). Compared to it, Finger Millet productivity is only about 3-4 quintals per acre. On price front also, average price of cotton per quintal is about 4 times higher than Finger Millet. However, limited millet cultivation is a continuous process owing to personal demand of Finger Millet by tribal farmers. Millet consumption is a traditional culinary practice among tribal households. Consumption of Finger Millet porridge is a summer delight for tribal households and they say “Finger Millet is life to tribal people.” So, Finger Millet production mainly for self-consumption has continued and other millets have lost their relevance due to alternative staple foods like rice. Despite diminishing importance of millets, in the annual new food festival, they prepare a mixed crop recipe in which all millets are added and annual first food is celebrated by all family members. Similarly, even for seed sustainability purposes, tribal farmers do undertake some amount of millet crops mixed with other crops. So, culturally millet has significance on production as well as consumption front. Village wise opinions formed for declining millet cultivation is substantiated in the following table 11.



Table- 11: Reasons for the declining trend of millet farmers and area under millet cultivation

Sl.	Blocks	Villages	Identified reasons through FGD
1	Bissamacuttack	Baberi	Growing importance of increased income for family maintenance has pressurised farmers to substitute millet crops by cash crops. However, millet cultivation continues for the purpose of self-consumption rather than marketable surplus.
2		Gangadabaju	Millets are mostly grown in hills (dangars) and gradually there is competition of dangar land for cultivation of low market value millets, and high market value cash crops. Ultimately, farmers shift from millet crops to high value non millet crops like cow peas, cotton, and cashew nut cultivation.
3		Gunangpadar	Millets attract varieties of birds to crop-field. Due to shrinkage of millet crops in many villages, heavy flock of birds enter millet fields wherever it exists. So, it becomes quite difficult for the existing millet farmers to protect crop from birds. Resultingly, they shift to other crops most often not attracting so many birds on daily basis.
4		Raskola	Due to effective functioning of PDS, tribal people have been able to get required quantity of rice for their family consumption throughout the year. Due to easy access and usage of PDS rice, in the long-run the taste of people has changed towards rice. Resultingly, there is reduced importance of labour intensive millet cultivation towards household nutrition and food security.
5		Tada	During last few years, due to influence of cash crops and better income opportunities linked with cotton cultivation, cow peas and black-gram etc, farmers have used their millet lands for these high value cash crops.
6	Gudari	Brahguda	In recent years, the reliance of tribal households on hill cultivation (dangar cultivation) has tended to decrease owing to increased employment opportunities in non-farm sector, out migration based income of youth population and environmental awareness promoted by the NGOs. Traditionally Millets are mostly grown in hills by the millet farmers. Owing to decreased relevance of dangar cultivation, millet production in tribal areas have come down.
7		Malaguda	Increased profit opportunities of cashew plantation have detracted millet farmers from millet cultivation to cashew cultivation.
8		Papikhal	Given that land is constant, there are multiple profitable opportunities by using the same land for profitable crops like black gram, cow peas etc., there is decreasing land use for millets.
9		Patamguda	The alteration in the rainfall patterns and increased frequency of high rain fall days have contributed to decreased reliance of millet farmer households on millet cultivation.
10		Sambarlendi	Since last two years, all millet farmers have replaced their traditional millet lands by cashew-nut and cotton crops. These are high value cash crops. The gross income per farmer from these crops is around 10 times higher than millets. So, massively almost all the millet farmers have substituted millet for cotton and cash crops.

SECTION IV

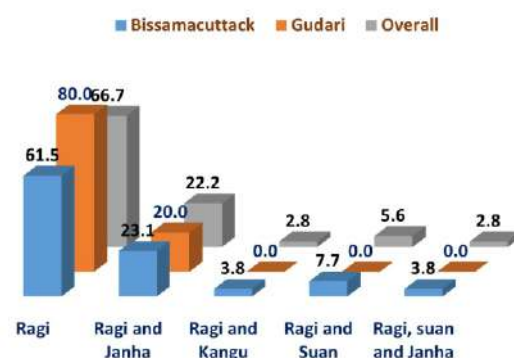
Millet Mapping

Despite continuous declining trend millet cultivation, still millet farming continues in tribal areas. A chunk of tribal farmers continues to cultivate different types of millet along with other crops. Present section deals relative share of millet cultivation in overall cropping pattern as pursued by millet farmers of the programme area.

4.1. Millet Combinations

As per table 12, it is revealed that maximum proportion of farmers cultivate only a single millet Finger Millet. Overall, about 66.7 percent of millet farmers cultivate Finger Millet only, which is 61.5 percent at Bissamacuttack block and 80 percent at Gudari block. Finger Millet and Sorghum combination is practiced by 23.1 percent of millet farmers of Bissamacuttack block and 20 percent of millet farmers in Gudari block. Other millet combinations like “Finger Millet & Foxtail millet”, “Finger Millet & Little Millet”, “Finger Millet, Little

Millet Combinations cultivated by Millet Farmers
(% of Millet Farmers)



Millet & Sorghum” in a small scale are found only in Bissamacuttack block. Thus, as Finger Millet followed by Sorghum are major millets cultivated by the millet farmers of the programme area

Table- 12: Millet farmers by type of millets cultivated

Sl.	Millet combinations	No. of millet farmers			% of millet farmers		
		Bissamacuttack	Gudari	Total	Bissamacuttack	Gudari	Total
1	Finger Millet	16	8	24	61.5	80.0	66.7
2	Finger Millet and Sorghum	6	2	8	23.1	20.0	22.2
3	Finger Millet and Foxtail millet	1		1	3.8	0.0	2.8
4	Finger Millet and Little Millet	2		2	7.7	0.0	5.6
5	Finger Millet, Little Millet and Sorghum	1		1	3.8	0.0	2.8
	Grand Total	26	10	36	100.0	100.0	100.0

Source: Millet Farmers Household Survey

One of the study objectives is to understand cultivation practices used by millet farmers for millet cultivation. As per interaction with farmers it is understood that millet is mostly cultivated by majority of farmers in Dangar land as mixed crop. Further tribal people are not acquainted with any type of transplantation of millet crops. So

usually, they broadcast millet seeds with other seeds. They also do not apply any type of fertilizer for growing millets. They believe that dangar lands are fertile lands by nature, so, they do not feel the importance of any fertilizer application. Even they are not trying cattle manure and urine for raising crop productivity.

4.2. Cropping Pattern pursued by Millet Farmers

The cropping pattern of millet farmers as discussed in table 13 exhibits that millets farmers undertake cultivation of variety millet and non-millet crops. The non millet crops are found wide ranging than millet crops. Out of 21 types of crops reported among the millet farmer households, there are 17 non millet crops and four millet crops. Proportion of millet farmers undertaking paddy cultivation stands almost like the proportion of millet farmers undertaking Finger Millet cultivation. This establishes that the importance of paddy and Finger Millet cultivation is influenced by their

staple food culture. In tribal areas Finger Millet is consumed along with rice and Finger Millet based recipes are their favourite staple food. So, for the purpose of self-consumption and household level food and nutrition security both crops are accorded equal importance. Similarly, more than 90 percent of the millet farmers also cultivate cow peas. Cow peas are used for self-consumption and at the same times it drives cash inflow for the household through sales of the marketable surplus. Maize is also cultivated for the purpose of self-consumption as well as creating marketable surplus for household cash inflow. Cotton, brinjal, tomato, pigeon peas are other cash crops cultivated by millet farmers.

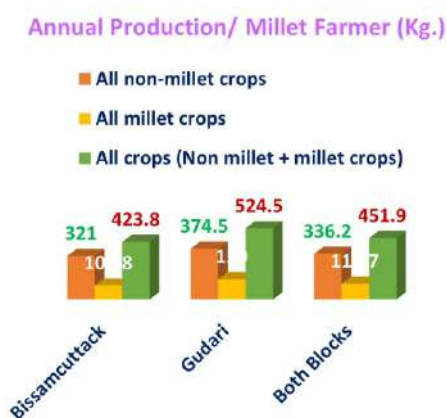
Table- 13: Cropping Pattern by millet farmers

Sl.	Cropping Pattern	No. of millet farmers			% of millet farmers		
		Bissamacuttack (n=26)	Gudari (n=10)	Total (n=36)	Bissamacuttack (n=26)	Gudari (n=10)	Total (n=36)
	Non-millet crops						
1	Blackgram	5		5	19.2	0.0	13.9
2	Brinjal	6	7	13	23.1	70.0	36.1
3	Caster	1		1	3.8	0.0	2.8
4	Colocasia	2		2	7.7	0.0	5.6
5	Cotton	5	1	6	19.2	10.0	16.7
6	Cow peas	24	9	33	92.3	90.0	91.7
7	Custard apple	2		2	7.7	0.0	5.6
8	Guava	1		1	3.8	0.0	2.8
9	Pigeon peas	1	2	3	3.8	20.0	8.3
10	Lemon	1		1	3.8	0.0	2.8
11	Maize	11	5	16	42.3	50.0	44.4
12	Nizer	1		1	3.8	0.0	2.8
13	Onion	2		2	7.7	0.0	5.6
14	Paddy	25	9	34	96.2	90.0	94.4
15	Pumpkin	2	2	4	7.7	20.0	11.1
16	Tomato	4	3	7	15.4	30.0	19.4
17	turmeric	3		3	11.5	0.0	8.3

Sl.	Cropping Pattern	No. of millet farmers			% of millet farmers		
		Bissamacuttack (n=26)	Gudari (n=10)	Total (n=36)	Bissamacuttack (n=26)	Gudari (n=10)	Total (n=36)
	Millet Crops						
18	Sorghum	5	2	7	19.2	20.0	19.4
19	Foxtail millet	1		1	3.8	0.0	2.8
20	Finger Millet	23	10	33	88.5	100.0	91.7
21	Little Millet	3		3	11.5	0.0	8.3

Source: Millet Farmers Household Survey

4.3. Crop Production by Millet Farmers



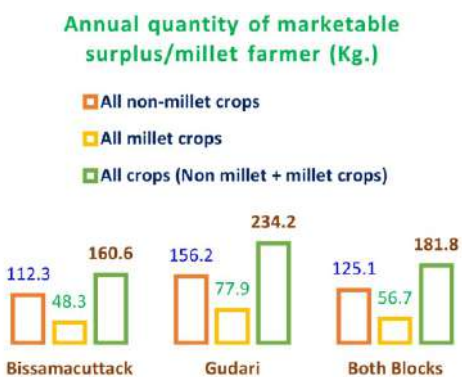
For the given cropping pattern as discussed in previous section, crop wise annual production per farmer is analysed in table 14. The annual production of non-millet and millet crops per millet farmer is found at 336.2 Kg. and 115.7 Kg respectively. Combined a millet farmer annually produces 451.9 kg. of agricultural produce from his operational holdings. Annual production per farmer for millet as well as non-millet crops is found higher at Gudari block relative to Bissamacuttack block

4.4. Self Consumption

A part of the total production is consumed by the household members, which is defined as self-consumption. Out of the total 336.2 Kg of total production of non-millet crops per farmer, about 179.8 Kg. are used for self-consumption. Similarly for millet crops also, out of the total annual production of 115.7 Kg per farmer, about 44.8 are used for self-consumption. The total amount of annual self-consumption of non-millet crops per millet farmer household at Bissamacuttack and Gudari blocks are calculated at 180.6 and 179.2 Kg. respectively. Similarly, regarding millet crops, annual self-consumption amount per millet farmer household is calculated at 42.4 Kg. in Bissamacuttack block and 52.6 Kg. in Gudari block



4.5. Marketable Surplus



The overall marketable surplus of agricultural production per millet farmer household is calculated at 181.8 Kg. which comprises of 125.1 Kg. for non-millet crops and 56.7 Kg. for millet crops. Out of the total marketable surplus of 160.6 Kg. of agricultural produce per millet farmer in Bissamacuttack block, marketable surplus for non-millet and millet crops are calculated at 112.3 Kg. and 48.3Kg. respectively. Similarly, in Gudari block, the marketable surplus per millet farmer for non-millet and millet crops is found at 156.2 Kg. and 77.9 respectively.

Table- 14: Annual Crop Production per farmer (2022-23 Crop Year)

Sl.	Reported crops	Annual crop production/ Millet Farmer (Kg.)			Annual quantity used for self-consumption/ Millet Farmer (Kg.)			Marketable Surplus/ Millet Farmer (= Annual Crop)		
		Bissamacuttack	Gudari	Total	Bissamacuttack	Gudari	Total	Bissamacuttack	Gudari	Total
	Non-millet crops									
1	Blackgram	183.0		183.0	23.3		23.3	127.8	0.0	127.8
2	Brinjal	165.0	161.4	163.1	38.3	36.7	37.5	101.4	99.8	100.5
3	Caster	40.0		40.0				32.0	0.0	32.0
4	Colocasia	80.0		80.0	20.0		20.0	48.0	0.0	48.0
5	Cotton	340.0	150.0	308.3				272.0	120.0	246.6
6	Cow peas	260.8	208.9	246.7	52.3	31.7	46.3	166.8	141.8	160.3
7	Custard apple	125.0		125.0	15.0		15.0	88.0	0.0	88.0
8	Gouva	100.0		100.0	20.0		20.0	64.0	0.0	64.0
9	Pigeon peas	40.0	42.5	41.7	10.0	20.0	15.0	24.0	18.0	21.4
10	Lemon	20.0		20.0	10.0		10.0	8.0	0.0	8.0
11	Maize	93.6	212.0	130.6	30.6	23.0	27.9	50.4	151.2	82.2
12	Niser	50.0		50.0				40.0	0.0	40.0
13	Onion	300.0		300.0	10.0		10.0	232.0	0.0	232.0
14	Paddy	711.2	997.3	786.9	601.3	662.5	616.6	87.9	267.8	136.2
15	Pumpkin	125.0	175.0	150.0	45.0	25.0	35.0	64.0	120.0	92.0
16	Tomatoo	137.5	200.0	164.3	30.0	33.3	31.4	86.0	133.4	106.3
17	turmeric	27.3		27.3	7.5		7.5	15.8	0.0	15.8
	All non-millet crops	321.0	374.5	336.2	180.6	179.2	179.8	112.3	156.2	125.1

Sl.	Reported crops	Annual crop production/ Millet Farmer (Kg.)			Annual quantity used for self-consumption/ Millet Farmer (Kg.)			Marketable Surplus/ Millet Farmer (= Annual Crop)		
		Bissamac uttack	Gudari	Total	Bissamac uttack	Gudari	Total	Bissamac uttack	Gudari	Total
	Millet Crops									
18	Sorghum	210.0	160.0	195.7	23.3	10.0	18.0	149.4	120.0	142.2
19	Foxtail millet	40.0		40.0	40.0		40.0	0.0	0.0	0.0
20	Finger Millet	88.3	148.0	106.4	50.9	61.1	53.8	29.9	69.5	42.1
21	Little Millet	56.7		56.7	10.0		10.0	37.4	0.0	37.4
	All millet crops	102.8	150.0	115.7	42.4	52.6	44.8	48.3	77.9	56.7
	All crops (Non millet + millet crops)	423.8	524.5	451.9	223.0	231.8	224.6	160.6	234.2	181.8

Source: Millet Farmers Household Survey

Case Study 1: Adu Sabar is a thought leader with futuristic attitude for millet Cultivation

Shri Adu Sabar, aged about 75 years has been living in a joint family with sons, daughter in laws and grandchildren at Sambarlendi village of Karlghati GP in Gudari block. Looking at his age, he is a retired person. Since his childhood, he has been associated with Finger Millet cultivation. His children and grandchildren are not very much interested to further continue millet cultivation. But at the same time, they do not discourage Adu Sabar for millet cultivation. On our enquiry, why is he the only person in his village and no other person in his village are engaged in millet cultivation. He says that “our village people have started running after cash only”. They are highly motivated for cash crops and not for millet cultivation. However, all households consume millets during summer season. Some of the households contribute their labour in his millet harvesting process. Happily, he gives some amount of Finger Millet as wage good to them. They express gratitude to Adu Sabar. He will continue to cultivate millets because if he does not cultivate millets, a time will come, when there will not be availability of Finger Millet seeds and Finger Millet will extinct like any other millet lost in his village in the course of time. So, Adu Sabar despite his age is thought leader of his village for the sustainability of millet cultivation in his village.

Case Study 2 : Diversified cropping pattern including traditional crops, and cash crops not only ensures household nutrition and food security but also guarantees household income security.

Ms. Arjani Sabar aged above 70 years' is a resident of Patamguda village under Karlaghat GP of Gudari block. She is a widow surviving with her three daughters. She believes in crop diversity, and for ensuring it she cultivates wide variety of crops including paddy, pulses, brinjal, tomato, Finger Millet, sorghum, and emerging cash crop cotton. On our enquiry, why does she cultivate millets along with cotton. Her reply was quite fantastic. She said tribal people are great lovers of Finger Millet porridge due to intrinsic qualities in terms health. They are also not that much market dependent with respect to their food requirements. So, inclusion of millet is a necessity in a diversified cropping system. Like any other people, she also needs money to run after his family. Through diversified cropping system, she has been able to generate marketable surplus from all the crops she cultivated last year. She got good income by selling about 10 quintals of cotton, which is her second best of income earning source. So, diversified cropping pattern including traditional crops, and cash crops not only ensures household nutrition and food security but also guarantees household income security.

4.6 Annual Employment in millet farming

In order to understand the extent of employment of millet farmers in millet based cultivation, the total number of person days of employment per millet farmer household in the overall on farm activities were studied. The total annual on farm employment person days were further classified under millet and non-millet based cultivation. The village wise person days of employment per millet farmer household is analysed in table 15. Overall, at Bissamacuttack block it is found that each millet farmer annually gets 30 person days of employment through millet cultivation which is about 9.1 percent of the total on farm person days of employment of 330 days. The same at Gudari block is found at 33 days, which is about 14.0 percent of the total on- farm person days of employment of 233 days.

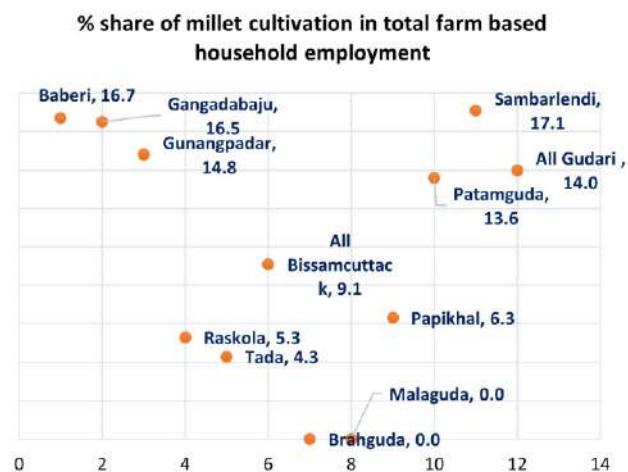


Table- 15: No. of person days employment in millet and non-millet farming operations

Sl.	Blocks	Villages	No. of person days of employment by households					% share of millet based employment in total farm based employment
			(In range)		Mid value			
			Millet cultivation	Non-millet cultivation	Millet cultivation	Non-millet cultivation	Total	
1	Bissamacuttack	Baberi	(40-50)	(200-250)	45	225	270	16.7
2		Gangadabaju	(45-50)	(230-250)	48	240	288	16.5
3		Gunangpadar	(40-50)	(220-300)	45	260	305	14.8
4		Raskola	(10-15)	(200-250)	13	225	238	5.3
5		Tada	(14-20)	(350-400)	17	375	392	4.3
		All Bissamcuttack	(10-50)	(200-400)	30	300	330	9.1
6	Gudari	Brahguda	0	(280-320)	0	300	300	0.0
7		Malaguda	0	(200-250)	0	225	225	0.0
8		Papikhal	(6-10)	(100-140)	8	120	128	6.3
9		Patanguda	(20-40)	(180-200)	30	190	220	13.6
10		Sambarlendi	(55-65)	(280-300)	60	290	350	17.1
		All Gudari	(0-65)	(100-300)	33	200	233	14.0

Source: Based on analysis of data obtained through FGD

SECTION V

Culture of Household Millet Consumption

Millet consumption is very much associated with millet production in the tribal areas because the tribal economy is very much a self-sufficient but a subsistence type of simple economy. People's consumption is very much incidental upon their own production. Present section deals with household behaviour of millet consumption in terms of types of millets consumed last year (2022-23 financial year), type of millet recipes consumed at household level, seasonality of millet consumption, household millet purchase behaviour, and household level awareness about the benefits of millet consumption.

5.1. Type of Millet Consumption

Finger Millet, Little Millet, Sorghum and Foxtail millet are consumed by households. However, as it is observed in table 16, Finger Millet is consumed by almost all households in all villages. So, it is viewed that Finger Millet is a flagship millet for household millet consumption. Other millets Little Millet, and sorghum are not that much universally consumed. Out of 10 villages covered in the study, Finger Millet, Little Millet, & Sorghum combination is found in 1 village only implying in 10 percent of the programme villages, this combination holds good. Similarly, Finger Millet &

Sorghum combination is found in 40 percent of the programme villages and Finger Millet is exclusively consumed in 60 percent of the programme villages. The incidence of millet combinations reported in household millet consumption last year in the programme area is shown in the chart given alongside. Despite different millet combinations under household millet consumption, Finger Millet is found to be an indispensable millet among a class of millets.

The different millet recipes consumed at household level is influenced by type of millet consumed. Finger Millet porridge (Mandia Jau) is a common recipe found across households in the programme area. According to taste and availability of other millets, mixed porridge with other millets is also found. In mixed porridge, Finger Millet and rice mixed porridge is very much common. Finger Millet porridge is a staple food and can be substituted for any meal of the day. Other millet items are consumed irregularly and as a non-staple food and consumption is subject to individual consumer's tastes and preference. Tribal people view that their life lies in Finger Millet porridge and Finger Millet is their life and blood. So, Finger Millet porridge happens to be the culturally iconic millet food in the programme area.

Table- 16: Household behaviour of Millet consumption

Sl.	Blocks	Villages	Type of millets consumed last year	Type of millet recipes consumed at household level
1	Bissamacuttack	Baberi	Finger Millet, Little Millet and Sorghum	Finger Millet porridge (Mandia Jau), Finger Millet and rice mixed Porridge (Mandia Peja), Finger Millet Cake (Finger Millet Pitha and Finger Millet Poda Pitha), Finger Millet, Little Millet and cow peas mixed porridge, Sorghum rice, Sorghum Puff
2		Gangadabaju	Finger Millet and Sorghum	Finger Millet porridge (Mandia Jau), Finger Millet Upma (Mandia Tampa- salted, Mandia Tampa-sweet),
3		Gunangpadar	Finger Millet and Sorghum	Finger Millet Porridge, Finger Millet Cake (Mandia Pitha), Finger Millet Dosa (Mandia Chakuli), Sorghum rice (Sorghum Bhata)
4		Raskola	Finger Millet	Finger Millet porridge, Finger Millet mixed with nizer cake (Mandia alasi pitha), Finger Millet and rice mixed porridge.
5		Tada	Finger Millet and Sorghum	Finger Millet Porridge (Mandia Jau), Mandia Poda Pitha, Sorghum bhata

Sl.	Blocks	Villages	Type of millets consumed last year	Type of millet recipes consumed at household level
6	Gudari	Brahguda	Finger Millet	Finger Millet and Rice mixed Porridge (Mandia Jau bhata)
7		Malaguda	Finger Millet	Finger Millet porridge (Mandia Jau), Finger Millet Cake (Finger Millet Pitha)
8		Papikhal	Finger Millet	Finger Millet porridge (Mandia Jau), Finger Millet Cake (Finger Millet Pitha)
9		Patamguda	Finger Millet and Sorghum	Finger Millet Cake (Finger Millet Pitha), Finger Millet porridge mixed with horse gram, Finger Millet porridge mixed with cowpeas, Finger Millet porridge mixed with rice, Sorghum rice (Sorghum Bhata), Puffed Sorghum
10		Sambarlendi	Finger Millet	Finger Millet porridge mixed with rice, Finger Millet dosa (Mandia Chakuli)

Source: Based on analysis of data obtained through FGD

5.2 Seasonality of Millet Consumption

Seasonality of millet consumption is studied in the light of quantity of millet consumed per household per month, pattern of millet consumption and most popular timing for millet consumption. As per the analysis made in table 17, quantity of millet consumption per household per month during Summer, Winter and Rainy season is about 13 Kg., 7 Kg. and 5 Kg. respectively. Regular consumption of millets by all households is the

dominant consumption pattern in summer season. Similarly, during winter season, regular consumption of millets by few or all households and in Rainy season millets as occasionally consumed by few or all households are found as the dominant millet consumption patterns. Anytime of the day is the dominant popular timing of consuming millet during summer as against Lunch timing in winter season and breakfast timing in Rainy season.

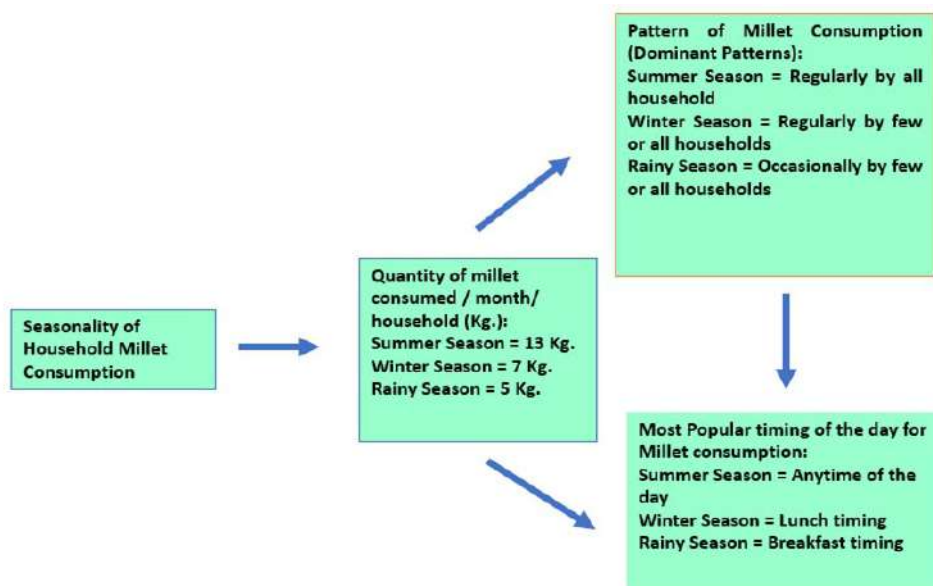


Table- 27: Frequency of household consumption of millet based recipes

Sl.	Blocks	Villages	Seasonality of household millet consumption (Kg./Household/Month)			Pattern of millet consumption (Regularly by all households/ Occasionally by all households, regularly by few households, occasionally by few households, not consumed by any household)			Popular timing of the day for millet consumption by households		
			Summer Season	Winter Season	Rainy Season	Summer Season	Winter Season	Rainy Season	Summer Season	Winter Season	Rainy Season
1	Bissamacuttack	Baberi	9	6	4.5	Regularly by all households	Occasionally by all households	Occasionally by few households	Breakfast and lunch	Breakfast and lunch only.	Breakfast
2		Gangadabaju	5	2	1	Regularly by all households	Regularly by few households	Occasionally by few households	Breakfast and lunch	Lunch	Breakfast
3		Gunangpadar	24	24	5	Regularly by all households	Regularly by few households	Regularly by few households	Any time of the day.	Any time of the day.	Breakfast
4		Raskola	18	15	20	Regularly by all households	Regularly by few households	Occasionally by few households	Breakfast only.	Breakfast only.	Breakfast only.
5		Tada	10	0	5	Regularly by all households	Not consumed by any household	Occasionally by few households	Breakfast, lunch, and dinner.	Not consumed	Any meal of the day.
6	Gudari	Brahguda	3	0	0	Regularly by all households	Not consumed by any household	Not consumed by any household	Any time of the day.	Not consumed	Not consumed
7		Malaguda	12	6	6	Regularly by all households	Regularly by all households	Regularly by all households	Breakfast and lunch	Lunch	Lunch
8		Papikhal	15	7	2	Regularly by all households	Regularly by all households	Occasionally by all households	Breakfast and lunch	Lunch	Any time of the day.
9		Patamguda	20	10	2	Regularly by all households	Regularly by all households	Occasionally by few households	Any time of the day	Lunch	Post Lunch (Supper)
10		Sambarlendi	12	0	0	Regularly by all households	Not consumed by any household	Not consumed by any household	Any time of the day	Not consumed	Not consumed
	Overall behaviour in the programme area		13 Kg. / Month/ Household	7 Kg. /Month/ Household	5 Kg./ Month Household	Regularly by all households is the dominant consumption pattern.	Regularly by few or all households is the dominant consumption pattern.	Occasionally by few or all households is the dominant consumption pattern.	Anytime of the day is the dominant popular timing	Lunch is the dominant popular timing.	Breakfast is the popular timing

5.3 Household Millet Purchase Behaviour

The decision to purchase millet from external sources arise only when there is shortage of own production and absence of own production for undertaking household millet consumption. As per the household opinion recorded in table 18, it can be stated that tribal households are never interested to purchase millets. They do not have willingness to pay for millet. They think that if at all they must pay for any food item, they should purchase some superior food. Till date, they think that millets are not superior foods. In some other cases, the households who do not produce millets, but take interest to consume millets, they supply their labour to fellow millet farmers and in lieu of that they receive millet

(Finger Millet) as wage good. There is gift tradition of millets and other cultivated food items in tribal societies. In the event of non-production of a particular food item, they receive it as gift from friends, and relatives. However, they consider PDS Finger Millet supply as was done last year for 2-3 summer months is a good step for meeting their Finger Millet requirements during summer months. The proportion of households who purchase millets from local market are very few and most often they purchase millets from villagers, who have some surplus millets with them. Now-a-days, sufficient availability of rice through PDS has subsided the necessity of millet purchase because of the changed food preference in favour of rice.

Table- 18: Household Millet Purchase Behaviour

Sl.	Blocks	Villages	Household millet purchase decision
1	Bissamacuttack	Baberi	Tribal households are never interested to purchase millets. They do not have willingness to pay for millet. They think that if at all they must pay for any food item, they should purchase some superior food. Till date, they think that millets are not superior foods. However, they consider PDS Finger Millet supply as was done last year for 2-3 summer months is a good step for meeting their Finger Millet requirements during summer months.
2		Gangadabaju	PDS supply of millet during summer months is a good initiative for supporting household Finger Millet consumption requirements during summer season.
3		Gunangpadar	From other sources, they are not purchasing millets. However, happily they offtake the Finger Millet supply done through PDS.
4		Raskola	In addition to PDS provision of millet, the additional requirement of Finger Millet is procured from the local market. Even few villagers having surplus Finger Millet also sell to village people on demand.
5		Tada	Households do make self-consumption of Finger Millet produced by them. But they do not purchase from market. Also, Finger Millet is their traditional food. But shortage of Finger Millet is not a problem, because rice is sufficiently available through PDS.
6	Gudari	Brahguda	The households do not produce Finger Millet. But the PDS supplied Finger Millet during summer months takes care of the household Finger Millet requirements during summer season.
7		Malaguda	PDS supply of Finger Millet during summer months takes care of household Finger Millet consumption requirements. But they never purchase millet from any other source.
8		Papikhal	They do not feel the necessity of millet purchase. Majority of households produce Finger Millet and sorghum which are enough for their own requirements.
9		Patamguda	In addition to PDS support few households make need based purchase from the local market at village and Gram Panchayat level.
10		Sambarlendi	In addition to PDS support few households make need based purchase from the local market at village and Gram Panchayat level. In tribal areas, labour is not hired in the farming activities, rather there is mutual dependence among the farmers. If one farmer needs labour, other farmers work for him. Sometimes, tribal people working in other farms, receive Finger Millet as gift or wage good. Such wage Finger Millet based wage good sometimes make millet consumption smooth.

Source: Based on analysis of data obtained through FGD



5.4 Perceived Benefits of Millet Consumption

In order to understand the benefits of millet consumption, 12 key impact areas of millet consumption were studied. There is good deal of awareness among tribal people regarding the health benefits of millet foods. They perceive that, consumption of Finger Millet porridge is the source of energy, vitality, and blood in the human body. It counters bloodlessness among pregnant women. For healthy pregnancy, regular consumption of Finger Millet porridge is important in tribal culture. Use

of millet as dietary supplement among the adolescent girls makes them energetic and beautiful. Use of millets among small children aged up to 3 years is very much necessary to make them healthy and preventing them from bloodlessness. Consumption of Finger Millet porridge is very important as it flushes out the body toxins through urines. Such high level of awryness can also be attributed to traditional knowledge and wisdom prevailing in tribal society. The details of the perceived benefits of millet consumption as recorded during our discussion with them is reproduced in table 19.

Table- 19: Perceived benefits of Household Millet Consumption

Sl.	Key Impact areas of millet consumption	Consumption Realisation	Perceived Benefits on health, nutrition, and food security
1	Hunger period and millet consumption (i.e., few of the households not getting square meals every day)	Mostly consumed in summer season followed by Winter season. Few households, sometimes in a year face shortage of food. At that time, they can survive with less quantity of Finger Millet.	Consumption of Finger Millet is nutritious and healthy. Even in hard work at their hillock based fieldwork, if they consume Finger Millet porridge intermittently, they do not feel tired. It provides vigour and blood.
2	Inclusion of millet based recipes in the MDM of school going children	It is yet to be included in MDM.	Finger Millet is ethnic food in tribal areas. Tribal children are acquainted with traditional millet foods. If it is mainstreamed in MDM also, it will be a good step.

Sl.	Key Impact areas of millet consumption	Consumption Realisation	Perceived Benefits on health, nutrition, and food security
3	Use of millet as PDS item	It was given two times during summer season in 2023-24 and 2022-23.	In recent years there has been declining millet cultivation. Tribal people occasionally purchase Finger Millet from the market. However, good deal of farmers maintain stock of Finger Millet for self-consumption of Finger Millet in summer months. PDS supply of Finger Millet in summer season has ensured smoothening of millet consumption in summer months.
4	Use of millet through ICDS/ Anganwadi Centre	Yet to be included and mainstreamed.	It would be better if millet particularly Finger Millet based recipes are prepared under Supplementary Nutrition Programme (SNP) at Anganwadi Centre (AWC).
5	Use of millet as Take Home Ration (THR)	Yet to be included and mainstreamed.	Provision of Finger Millet flour along with rice and other items of THR should be introduced.
6	Use of millet as dietary supplement among the pregnant women	Pregnant women do consume Finger Millet porridge along with other foods.	It counters bloodlessness among pregnant women. For healthy pregnancy, regular consumption of Finger Millet porridge is important in tribal culture. However, owing to changed food habits, Finger Millet consumption during pregnancy time is not followed strictly, as it was in the past.
7	Use of millet as dietary supplement among the adolescent girls.	Adolescent girls consume millet based recipes along with other family members.	Skin quality is better. Girls look stronger with regular Finger Millet consumption.
8	Use of millets among small children aged upto 3 years	Small children consume millet based recipes along with other family members.	Children become healthy and reduced incidence of bloodlessness.
9	Use of millet as staple food substituting rice or wheat.	It has remained as a good staple food, but now a days, due to better availability of rice through PDS, rice has become a staple food.	Consumption of Finger Millet is healthy and it is to be consumed at frequent intervals to avoid hunger pangs, however consumption of avoids hunger pangs for a longer time.
10	Use of millet by the labourers going out of work.	Use of millet by the labourers going out of work is a common practice in Summer and Winter seasons in tribal areas.	Even in hard work, due to consumption of Finger Millet porridge, people do not become thirsty and they take Finger Millet porridge to place of work for avoiding thirsty and hunger at place of work. In this manner work hour and quality of work at work place tend to increase.
11	Use of millets in social ceremonies/ Community get togethers	Not used in social ceremonies like marriage. It is strictly not used in community get togethers, because of the stigma of “inferior food” attached to Finger Millet.	It is a traditional family level food. Its consumption in marriage like social gatherings is felt as lack of status and prestige of the host.
12	Use of millets for religious practices	Used in the annual “Seed Festival” in tribal families, which is great festival celebrated on the first Tuesday of the Odia month of Chaitra. Boiling all seeds and making a recipe for all family members is believed to be the source of energy for all members of the family.	Boiling all seeds and making a recipe for all family members is believed to be the source of energy for all members of the family.

Source: Based on analysis of data obtained through FGD

SECTION VI

Millet Processing and marketing

In this section, millet farmers' behaviour about processing and marketing of millets, is analysed. Processing and marketing relate to the post-harvest management practices of millet farmers. Processing of millets are very much related with the type of millet based recipes prepared by households. The marketing part relates to selling of surplus millets produced by them.

The type of first-hand processing of the produced millets by the farmers themselves is conceptually known as primary processing. The processing activities mainly comprise of converting Finger Millet to flour and de-husking in the case of other millets including Sorghum, Little Millet, and foxtail millet. With respect to Finger Millet flour making, majority of households depend on traditional stone chakki available in all households. On the other hand, for other types of millets, de-husking of millet is required which is done through traditional means by all households. Locally available traditional instruments like “dhinki”, made up of wooden logs, and “hand pounders”, are used for dehusking. Dhinki, Chhaki and hand pounders are traditional manually operated simple devices readily available in almost all households.

Economics of Maa Mangala Powder Mill

1. Processing Charge of Finger Millet = Rs.5/Kg.
2. Processing Charge of rice and other items = Rs.10/Kg.
3. Machine operating hours/day = 12 hours
4. Earning/day = Rs.300.00
5. No of functional days/ month = 20 days.
6. Gross Earning/ Month = Rs.6000.00

Recently, two years back, with Odisha Tribal Empowerment and Livelihood (OTELP) support, a women SHG Group “Maa Mangala SHG, Patamguda” has installed a flour mill. Local people from Patamguda village and adjoining villages take benefits from this flour mill. Instead of manual processing, they convert Finger



Millet, rice and other spices into flour by paying the price fixed by the mill. Local women greatly benefit from this mill by avoiding drudgery of manual processing. The Economics of this flour mill is as furnished in the box given alongside.

So far as processing of marketable surplus is concerned, traditionally millets farmers were categorising millets particularly Finger Millet under two categories as with and without husk. Accordingly, there was price differentiation and obviously they were selling with husked millets at lower price and without husked millets at a higher price. Soon after the introduction of Mandies under Odisha Millet Mission (OMM), millet farmers are processing their millets as per Mandi standards. They are sun-drying dehusked millets for maintaining required moisture. Very commonly, they sell millets with husk at a lower price. Majority of millet farmers sell their marketable surplus at their doorstep to middlemen coming to their villages. Last year, only a small chunk of millet farmers had sold Finger Millet through PDS.

SECTION VII

Status of Institutionalisation of Millets



7.1 Provision of millet in PDS

Provision of millets in PDS has been implemented but to be mainstreamed. Except two times during last four years i.e., September 2023 and December 2019, PDS Finger Millet was not given in any other time. PDS provisioning of millet was made in a ratio of 40 percent Finger Millet and 60 percent rice.

Key Constraints: In order to mainstream millets in regular PDS supply, there is need of an established supply chain for millets as it is in the case of rice. Due to lack of volume even in traditional millet grown areas, it is very difficult to ensure a perfect supply chain. Further millet farmers as well millet cultivation is declining over time. So, perennial sources of millet supply are very much constrained. Limited millet procurement in limited areas

for which round the year supply of millet under PDS is viewed not feasible. Again, whatever millet amount is procured from the farmers are immediately disposed of through PDS, because there is lack of millet godowns. Further, there is no demand for Finger Millet through PDS. People are hesitant to pay any price for Finger Millet. They think that Finger Millet is a very cheap good.

7.2 Provision of Millet in MDM

Govt. has planned to give millets in Mid-Day Meal (MDM) programme run in schools since 2017-18 with the start of OMM in Odisha. But till date, the MDM menu has not been revised and millets are not included in the MDM menu. So, millets are yet to be mainstreamed in MDM.

Key Constraints: Perhaps, right quantity and quality of millets are not available consistently throughout the year for which, millets are yet to be included in the menu of MDM. The menu of MDM is decided at Directorate level and once a menu is decided, it continues for three to four years.

7.3 Provision of Millets in ST/SC Development Hostels (SSD Hostels)

Finger Millet snacks (Finger Millet porridge/ soup) is provided in STSC Development Hostels (SSD Hostels) once in every week. There is affinity of such foods among the tribal children. Despite interest hostel inmates, regular provisioning of millets is yet to take place because it is subject to menu fixed by the district administration.

Key Constraints: However, it could be considered under daily menu of the hostel, if district administration approves it.



7.4 Provision of Millets for Integrated Child Development Services- Supplementary Nutrition Programme/ Take Home Ration (ICDS-SNP/ THR)

The piloting of millet based foods has been made in a good number of clusters in different districts. However, it is yet to be universalised as millet based SNP/THR. It is reported that the Chhatua (Multi grain) powder supplied under THR contains Finger Millet powder as one of the ingredients.

Key Constraints: WLCD Department recommends the menu for SNP / THR and accordingly at district and block level menu is practiced. With respect to Finger Millet and other millets, there is no such provision in the recommended menu. So, millets are not covered under regular SNP/ THR. Again, change of menu at WLCD department takes place at two-three years' time interval. If the revised menu includes millet based recipes, millets will be introduced in ICDS supported SNP and THR.

7.5 Functioning of Odisha Millet Mission (OMM)

In Rayagada district, the OMM programme is implemented in 9 blocks covering Chandrapur, Muniguda, Gudari, Gunupur, Rayagada, Bissamacuttack, Kalyansinghpur, Kashipur, and Kolnara. There are partner NGOs for every block.

Key Constraints: The Raskola GP of Bissamacuttack block and Karlghati GP of Gudari block are yet to be covered under OMM. So, the farmers of the programme area have not received any input support from the OMM. However, under OTELP Plus project, awareness programmes for millet production and consumption are regularly taking place. The local NGO, Society Welfare Animation and Development (SWAD), Rayagada, A Caritas India Partner for "Global Programme" is also making similar awareness in the programme.

SECTION VIII

Scoping for Millet Entrepreneurship

This year, the whole world is celebrating as “International year of Millet” as millets are viewed as climate resilient crop because it is less water intensive and is capable of countering global food challenges. But scoping for entrepreneurship at local level appears to be very much challenging owing to supply side as well as demand side limitations. There are supply side issues for which farmers are not sufficiently coming forward to increase production and consequently creating marketable surplus. Similarly, from the point of demand, millets are not felt as a need at most basic level. In order to convert any commodity as demand, first and foremost requirement is that it should be perceived as a need by consumers. Owing to plenty availability of other staple food items, particularly rice, millets are not perceived as a need in the local area.

Entrepreneurship for a product will take place only when there is an assured demand potential for the commodity. At the same time in order cater the demand, there should



also be an assured supply with consistent quantity and quality. Present section after analysing the demand side opportunities and constraints compared with supply side opportunities and constraints at local level, undertakes a scoping exercise for millet entrepreneurship by chalking out demand and supply side opportunities.

8.1 Demand Side

Table 20: Opportunities and Constraints for Millet Demand

Opportunities	Constraints
<ol style="list-style-type: none"> 1. Tribals have preference for traditional Finger Millet based recipes. 2. Finger Millet is treated as a flagship millet because of its versatile quality as a staple food 3. Finger Millet porridge is an iconic recipe considered as source of life, vigour, energy, and blood to the human body, so a superior culturally compulsive food in local area. 4. Tribal households have a habit of consuming millet since generations. 5. There are emerging tastes for modern millet based value added products. 6. Super markets, high end stores and even local grocery shops do maintain stock of packaged millets to meet demand of urban consumers. 7. Millets have emerged as super foods among educated, urbanised elite class. 8. There is elite sector demand for millets for which it has niche market demand. 	<ol style="list-style-type: none"> 1. Among the bulk of the rural masses, millet is still considered as an inferior good. 2. The millet farmers themselves, even in the case of their shortage of millet stock or non-production of millets in a particular year don't have the willingness to pay for millet as they feel it is very cheap commodity and a sort of throwaway demand attitude. 3. Given plenty of other staple foods and value added products, there is increased competition and difficult to push millet items as most superior food items relative to other food items.

8.2 Supply Side

Table 21: Opportunities and Constraints for Millet Supply

Opportunities	Constraints
<ol style="list-style-type: none"> 1. There is increased Govt. patronage for millet cultivation through different schemes. Odisha Millet Mission, Crop Diversification Programme (CDP) and Cluster Development Programme etc are aimed at promoting millet cultivation by incentivising farmers for transitioning to millet crops. 2. Millet crops are highly cost effective in relation to other costs, so it is most feasible option for the new farmers to enter millet cultivation and existing millet farmers to put more land and labour in millet cultivation. 3. It requires very less amount of water and in dry land and rain fed agricultural systems, it is most viable crop for cultivation. 4. Govt. has fixed mandi price for Finger Millet and other millets, so, there is price stability for millet crops. 5. Govt. is specially thinking of millet farmers' federation through the "Promotion of 10000 FPO scheme" currently being implemented at all India level. 6. On the top of "International Year of Millet", NABARD is committed to provide adequate capacity building and hand holding support for expediting millet cultivation in all parts of the country. 	<ol style="list-style-type: none"> 1. Farmers are more intensively oriented to cash crops and typically the millet lands are found best suitable for cotton and cashew-nut cultivation, ensuring much higher income to the farmers. 2. Advent of new technologies and ideas even at local level is providing fresh impetus towards change from current situation to something new. So, obviously, the traditional millet farmers are also opting change. 3. There is life style change among the traditional millet farmers for which they want to lead to higher income strategies. They think that traditional system of cultivation including millets will not provide any positive payoff, for which millet cultivation is also constrained.

8.3 Scoping for Millet Entrepreneurship in the Programme Area

Given the above mentioned demand and supply side opportunities, the millet entrepreneurship may hold good as per the following.

- At local level few households have demand for millets and at the same time few millet households even after meeting their own personal consumption, do have marketable surplus for millets. Local people may be involved to aggregate the surplus millet of the local area and at a margin they can sell to the consumers who need millet.
- Local entrepreneurship can be directed towards cleaning of millets by removing dusts and stones accumulated in millets during the time of harvesting. Besides, sorting and grading of millets can also be undertaken as value addition activity. This type of value addition could be undertaken at local level.
- There is demand for Finger Millet flour among all households and in the absence of any flour mill in

the village or adjacent village, women members of the family do make Finger Millet flour manually at home. There is good scope of at least 1 flour mill within 10 Kms. radius by road distance.

- Packaging of clean millets with different pack sizes can be supplied to nearby grocery stores and super markets as a part of local entrepreneurial activity in millet sector.
- There is very good scope of collaboration with local tea stalls, and restaurants for serving millet items as additional products with new attributes. For instance, local tea shop owners should be persuaded to sell millet porridge in reusable plastic cups. So that consumers will find a choice between a cup of tea or a cup of Finger Millet porridge or Finger Millet soup. Similarly local restaurants will offer opportunities to buyers for making a choice between a Finger Millet dosa or normal dosa.

SECTION IX

Summary of Findings and Way Forward

9.1 Culture of Millet Production

- Despite 100 percent households' engagement in agricultural activity during the reference year, i.e., 2022-23, about 60.3 percent of farmers of Bissamacuttack block and 8.7 percent of farmers of Gudari block were involved in millet cultivation. The incidence of millet farmers at Bissamacuttack block is about 7 times higher than Gudari block. Finger Millet, Sorghum, Foxtail millet and Little Millet are presently cultivated by the millet farmers of the programme area.
- Millet cultivation practices are found skewed in favour of those farmers who are relatively in higher age group, comparatively lesser education of the farmer, having a smaller family (working members) size and lower occupational diversity.
- There is continuous declining trend in the number of millet farmers and millet area per farmer due to several confounding factors like - millet farmers are in the process of continuous substitution of millet lands for non-millet and high value cash crops. In recent years majority of millet lands are alternatively used for growing cotton, cashew nut and cowpeas.
- Over time, some of the millets like Khosala and Ghantia are found to have been extinct. In Gudari block, Little Millet and kangoo are also found extinct. The surviving millets include Finger Millet, Little Millet, Sorghum, and foxtail millet. Finger Millet followed by Sorghum are major millets cultivated by the millet farmers of the programme area.
- Millet farmers undertake cultivation of variety millet and non-millet crops. The non millet crops are found wide ranging than millet crops. Out of 21 types of crops reported among the millet farmer households, there are 17 non millet crops and four millet crops. Proportion of millet farmers undertaking paddy cultivation stands almost like the proportion of millet farmers undertaking Finger Millet cultivation. This establishes that the importance of paddy and Finger Millet cultivation is influenced by their staple food culture.
- In tribal areas Finger Millet is consumed along with rice and Finger Millet based recipes are their favourite staple food. So, for the purpose of self-consumption and household level food and nutrition security both crops are accorded equal importance.
- Overall, at Bissamacuttack block it is found that each millet farmer annually gets 30 person days of employment through millet cultivation which is about 9.1 percent of the total on farm person days of employment of 330 days. The same at Gudari block is found at 33 days, which is about 14.0 percent of the total on farm person days of employment of 233 days.
- Owing to several demand side as well as supply side factors, there has been continuous declining trend of millet production. Due to easy availability of other food items including PDS supported rice, millets have been substituted by rice, which are almost free of cost as provided through PDS @4 Kg/ household member per month. Similarly with respect to supply, as demand is declining, farmers do not accord priority to millet production. Like any other society, in tribal society also, there has been continuous increase in the demand for aspirational goods like smart phones, motor bikes, pucca houses etc. for which they need better income opportunities. Resultingly, they are shifting emphasis to cash crops and crop diversification. With this objective, in recent years, they have adopted cashew and cotton cultivation.
- Farmers obviously interested for other agricultural crops which provide them better income. Almost all farmers have massively undertaken cowpeas cultivation. Farmers who have not adopted either cashew nut or cotton cultivation, they have massively undertaken cow-peas cultivation. These three crops are predominantly substituted for millet cultivation.

- Farmers prefer to high value cash crops instead of unremunerative millets crops. Increased emphasis for cash crops and competition of different crops for limited agricultural land at the disposal of a tribal farmer, have pushed farmers to forego millet cultivation.
- Millet consumption is a traditional culinary practice among tribal households. Consumption of Finger Millet porridge is a summer delight for tribal households and they say “Finger Millet is life to tribal people”. So Finger Millet production mainly for self-consumption has continued and other millets have lost their relevance due to alternative staple foods like rice.

9.2 Culture of Millet Consumption

- Finger Millet is found to be the most dominant millet consumed by almost all households in the programme area. It is flagship millet for preparing traditional recipes for household consumption among the tribal people. Other millets Little Millet, and sorghum are not that much universally consumed.
- The different millet recipes consumed at household level is influenced by type of millet consumed. Finger Millet porridge (Mandia Jau) is a common recipe found across households in the programme area. According to taste and availability of other millets, mixed porridge with other millets is also found. In mixed porridge, Finger Millet and rice mixed porridge is very much common. Finger Millet porridge is a staple food and can be substituted for any meal of the day. Other millet items are consumed irregularly and as a non-staple food and consumption is subject to individual consumer’s tastes and preference. Tribal people view that their life lies in Finger Millet porridge and Finger Millet is their life and blood. So, Finger Millet porridge happens to be the culturally iconic millet food in the programme area.
- Regular consumption of millets by all households is the dominant consumption pattern in summer season. Similarly, during winter season, regular consumption of millets by few or all households and in Rainy season millets as occasionally consumed by few or all households are found as the dominant millet consumption patterns. Anytime of the day is the dominant popular timing of consuming millet during summer as against Lunch timing in winter season and breakfast timing in Rainy season.

- Tribal households are never interested to purchase millets. They do not have willingness to pay for millet. They think that if at all they must pay for any food item, they should purchase some superior food. Till date, they think that millets are not superior foods. In some other cases, the households who do not produce millets, but take interest to consume millets, they supply their labour to fellow millet farmers and in lieu of that they receive millet (Finger Millet) as wage good.

There is gift tradition of millets and other cultivated food items in tribal societies. In the event of non-production of a particular food item, they receive it as gift from friends, and relatives. However, they consider PDS Finger Millet supply as was done last year for 2-3 summer months is a good step for meeting their Finger Millet requirements during summer months. Now-a-days, sufficient availability of rice through PDS has subsided the necessity of millet purchase because of the changed food preference in favour of rice.

9.3 Millets and Health/ Nutrition Benefits

- There is good deal of awareness among tribal people regarding the health benefits of millet foods. They perceive that, consumption of Finger Millet porridge is the source of energy, vitality, and blood in the human body. It counters bloodlessness among pregnant women.
- For healthy pregnancy, regular consumption of Finger Millet porridge is important in tribal culture. Use of millet as dietary supplement among the adolescent girls makes them energetic and beautiful. Use of millets among small children aged upto 3 years is very much necessary to make them healthy and preventing them from bloodlessness. Consumption of Finger Millet porridge is very important as it flushes out the body toxins through urines.
- In tribal cultural set up, consumption of Finger Millet porridge among all age groups is considered very much important from health and nutrition point of view.

9.4 Millet Processing and Marketing

- The processing activities mainly comprise of converting Finger Millet to flour and de-husking in the case of other millets including Sorghum, Little Millet and foxtail millet. With respect to Finger Millet

flour making, majority of households depend on traditional stone chakki available in all households.

- On the other hand, for other types of millets, dehusking of millet is required which is done through traditional means by all households. Locally available traditional instruments like “dhinki”, made up of wooden logs, and “hand pounders”, are used for dehusking. Dhinki, Chhaki and hand pounders are traditional manually operated simple devices readily available in almost all households.
- So far as processing of marketable surplus is concerned, traditionally millets farmers were categorising millets particularly Finger Millet under two categories as with and without husk. Accordingly, there was price differentiation and obviously they were selling with husked millets at lower price and without husked millets at a higher price.
- Soon after the introduction of Mandies under OMM, millet farmers are processing their millets as per Mandi standards. They are sun-drying dehusked millets for maintaining required moisture. Very commonly, they sell millets with husk at a lower price. Majority of millet farmers sell their marketable surplus at their doorstep to middlemen coming to their villages.

9.5 Status of Institutionalisation of Millets

- Provision of millets in PDS has been implemented but it is yet to be mainstreamed. Except two times during last four years i.e., September 2023 and December 2019, PDS Finger Millet was not given in any other time. PDS provisioning of millet was made in a ratio of 40 percent Finger Millet and 60 percent rice. Govt. has planned to give millets in Mid-Day Meal (MDM) programme run in schools. But till date, the MDM menu has not been revised and millets are not included in the MDM menu. So, millets are yet to be mainstreamed in MDM.
- Finger Millet snacks (Finger Millet porridge/ soup) is provided in STSC Development Hostels (SSD Hostels) once in every week. There is affinity of such foods among the tribal children. Despite interest hostel inmates, regular provisioning of millets is yet to take place because it is subject to menu fixed by the district administration.
- The piloting of millet based foods has been made in a

good number of ICDS ers in different districts. However, it is yet to be universalised as millet based SNP/THR. It is reported that the Chhatua powder supplied under THR contains Finger Millet powder as one of the ingredients.

- In Rayagada district, the OMM programme is implemented in 9 blocks covering Chandrapur, Muniguda, Gudari, Gunupur, Rayagada, Bissamacuttack, Kalyansinghpur, Kashipur, and Kolnara. There are partner NGOs for every block. The Raskola GP of Bissamacuttack block and Karlghati GP of Gudari block are yet to be covered under OMM. So, the farmers of the programme area have not received any input support from the OMM.
- However, under OTELP Plus project, awareness programmes for millet production and consumption are regularly taking place. The local NGO, SWAD, Rayagada is also making similar awareness in the programme.

9.6 Scope for Millet Entrepreneurship

- At local level, few households have demand for millets and at the same time few millet households even after meeting their own personal consumption, do have marketable surplus for millets. Local people may be involved to aggregate the surplus millet of the local area and at a margin they can sell to the consumers who need millet. Local entrepreneurship can be directed towards cleaning of millets by removing dusts and stones accumulated in millets during the time of harvesting.
- Besides, sorting and grading of millets can also be undertaken as value addition activity. This type of value addition could be undertaken at local level. There is demand for Finger Millet flour among all households and in the absence of any flour mill in the village or adjacent village, women members of the family do make Finger Millet flour manually at home. There is good scope of at least 1 flour mill within 10 Kms. radius by road distance.
- Packaging of clean millets with different pack sizes can be supplied to nearby grocery stores and super markets as a part of local entrepreneurial activity in millet sector.



- There is very good scope of collaboration with local tea stalls, and restaurants for serving millet items as additional products with new attributes. For instance, local tea shop owners should be persuaded to sell millet porridge in reusable plastic cups. So that consumers will find a choice between a cup of tea or a cup of Finger Millet porridge or Finger Millet soup. Similarly local restaurants will offer opportunities to buyers for making a choice between a Finger Millet dosa or normal dosa.

9.7 Way Forward for promoting Millet Culture

Based on key findings of the study, following action points are forwarded towards the promotion and revival of millet cultivation in Rayagada district. This will further enable sustainable agriculture and food security in the region.

1. To motivate young farmers to engage in millet cultivation, a civil society organization may collaborate on awareness programs that emphasizes the growing importance of millet farming in sustainable agriculture and resilient crop patterns.

Additionally, training sessions and workshops are to be conducted for educating young farmers on millet cultivation techniques, the nutritional benefits of millets, their role in ensuring food security and highlight the significance of millets in local cuisine and culture.

2. A civil society organization should consider partnering with the Odisha Millet Mission (OMM) to implement OMM initiatives in the Raskola and Karlaghati Gram Panchayats. This collaboration would provide existing millet farmers with support and knowledge on millet cultivation practices, potentially revitalizing millet farming in Karlaghati GP. Alongside this, they can introduce a mentorship program with experienced millet farmers for guidance and support to newcomers, which is most likely to facilitate a smoother transition into millet farming.
3. The civil society organization should explore partnerships with research institutions to conduct studies on millet varieties and cultivation practices that are best suited to the local environment. This

research can provide valuable insights to improve millet cultivation in the region.

4. A civil society organization may explore the creation and promotion of Farmer Producer Companies in alignment with the Government of India's "10,000 FPOs Scheme" to empower and support millet farmers further.
5. To address the issue of large-scale conversion of millet lands for other crops, the civil society organizations should work with local authorities to advocate for sustainable land-use policies and

highlight the environmental consequences of such conversions. They can also promote agroforestry practices to preserve millet cultivation areas.

6. The civil society organization may establish a market linkage program, connecting millet farmers with potential buyers and consumers. This will ensure that millet farmers have access to markets and receive fair prices for their produce. Besides, the civil society organisations are expected to take care of the following points.

- Regular training programs covering modern agricultural practices, pest and disease management, and sustainable farming techniques are viewed to be of critical significance for promoting farmers knowledge and skills related to millet cultivation.
- Advocacy for government support and subsidies for millet farmers is felt urgent because policymakers are to recognize the importance of millet cultivation in promoting food security and sustainable agriculture.
- Promotion of Value-Added Products is likely to encourage millet processing units to produce value-added products such as millet flour, millet-based snacks, and millet-based beverages. Promote these products as healthier alternatives in the local market.
- Encourage farmers to diversify millet varieties by promoting the cultivation of different types of millets such as pearl millet, finger millet, and foxtail millet.
- Highlight the advantages of crop rotation and intercropping with other complementary crops for improved soil health.
- Support and educate local farmers to establish local seed banks for millets to ensure the availability of high-quality seeds for farmers. Organize seed distribution programs to provide farmers with access to these seeds at the beginning of each planting season.
- Implement a robust monitoring and evaluation system to assess the progress and impact of millet promotion programs. Regularly collect data on millet cultivation trends, yields, and economic benefits.
- Promote climate-resilient farming practices, such as rainwater harvesting and efficient irrigation methods, to mitigate the impact of changing weather patterns on millet crops.

ANNEXURE-I

Millet Farmers undertaking different millet cultivation in 2022-23

Village	GP	Block	District	Name of the Farmer
Raskola	Raskola	Bissamacuttack	Rayagada	Bhima Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Rajandra Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Pongaso Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Adi Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Sahab Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Lokindra Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Desku Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Nanda Kuidka
Raskola	Raskola	Bissamacuttack	Rayagada	Nava Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Mohan Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Siba Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Kumti Kuidka
Raskola	Raskola	Bissamacuttack	Rayagada	Nua Kuidka
Raskola	Raskola	Bissamacuttack	Rayagada	Raipul Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Hingamoshi Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Gura Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Karli Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Rabi Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Aminath Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Sandra Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Sipla Kudika
Raskola	Raskola	Bissamacuttack	Rayagada	Boda Kudika
Gangadabaju	Raskola	Bissamacuttack	Rayagada	Hari Palaka
Gangadabaju	Raskola	Bissamacuttack	Rayagada	Biswanath Palaka
Gangadabaju	Raskola	Bissamacuttack	Rayagada	Maranga Palaka
Gangadabaju	Raskola	Bissamacuttack	Rayagada	Saiba Gunitika
Gangadabaju	Raskola	Bissamacuttack	Rayagada	Timba Mambalika
Gangadabaju	Raskola	Bissamacuttack	Rayagada	Rohita Palaka

Village	GP	Block	District	Name of the Farmer
Gangadabaju	Raskola	Bissamacuttack	Rayagada	Bindu Mambalaka
Gangadabaju	Raskola	Bissamacuttack	Rayagada	Mina Kumusuka
Gangadabaju	Raskola	Bissamacuttack	Rayagada	Purna Mambalaka
Gangadabaju	Raskola	Bissamacuttack	Rayagada	Budara Mambalaka
Papikhal	Karlghati	Gudari	Rayagada	Sinu Hikabadi
Papikhal	Karlghati	Gudari	Rayagada	Mina Hikabadi
Papikhal	Karlghati	Gudari	Rayagada	Magha Hikabadi
Papikhal	Karlghati	Gudari	Rayagada	Laba Hikabadi
Papikhal	Karlghati	Gudari	Rayagada	Butudi Hikabadi
Papikhal	Karlghati	Gudari	Rayagada	Debanand Hikabadi
Papikhal	Karlghati	Gudari	Rayagada	Sumita Hikabadi
Papikhal	Karlghati	Gudari	Rayagada	Manata Hikabadi
Papikhal	Karlghati	Gudari	Rayagada	Raghunath Hikabadi
Papikhal	Karlghati	Gudari	Rayagada	Muduningi Hikabadi
Papikhal	Karlghati	Gudari	Rayagada	Rabi Hikabadi
Papikhal	Karlghati	Gudari	Rayagada	Sinraj Hikabadi
Papikhal	Karlghati	Gudari	Rayagada	Pungagha Hikabadi
Papikhal	Karlghati	Gudari	Rayagada	Marpa Hikabadi
Papikhal	Karlghati	Gudari	Rayagada	Ninanghu Hikabadi
Sambarlendi	Karlghati	Gudari	Rayagada	Adu Sabar
Malaguda	Karlghati	Gudari	Rayagada	No millet farmer
Brahgida	Karlghati	Gudari	Rayagada	No millet farmer
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Simon Ulaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Anta Mambalka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Sudama Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Santosh Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Narendra Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Petu Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Kalia Ulaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Kantara Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Harabi Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Ramesh Pidikaka

Village	GP	Block	District	Name of the Farmer
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Raju Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Pura Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Mahala Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Dibakar Takiri
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Mohan Takari
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Pradipa Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Kantaru Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Ladru Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Ulasa Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Sahu Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Ramesh Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Raimali Ulaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Rajanga Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Suba Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Laxman Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Rama Ulaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Sipla Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Pati Ulaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Basudeba Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Kasiri Ulaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Sidasa Ulaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Siba Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Dingu Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Pusta Pidikaka
Gunangpadar	Raskola	Bissamacuttack	Rayagada	Sahib Pidikaka
Babri	Raskola	Bissamacuttack	Rayagada	Kumriya Palaka
Babri	Raskola	Bissamacuttack	Rayagada	Chira Palaka
Babri	Raskola	Bissamacuttack	Rayagada	Lakhaan Palaka
Babri	Raskola	Bissamacuttack	Rayagada	Palanja Dakraprush
Babri	Raskola	Bissamacuttack	Rayagada	Trinath Palaka
Babri	Raskola	Bissamacuttack	Rayagada	Maga Palaka
Babri	Raskola	Bissamacuttack	Rayagada	Padu Kumbarka

Village	GP	Block	District	Name of the Farmer
Babri	Raskola	Bissamacuttack	Rayagada	Panganja Palaka
Babri	Raskola	Bissamacuttack	Rayagada	Hirapulu Palaka
Babri	Raskola	Bissamacuttack	Rayagada	Baruda Palaka
Babri	Raskola	Bissamacuttack	Rayagada	Nira Palaka
Babri	Raskola	Bissamacuttack	Rayagada	Loknath Kodriba
Babri	Raskola	Bissamacuttack	Rayagada	Sahadeba Palaka
Babri	Raskola	Bissamacuttack	Rayagada	Budarahi Hikabadi
Babri	Raskola	Bissamacuttack	Rayagada	Drisku Palaka
Babri	Raskola	Bissamacuttack	Rayagada	Jagada Palaka
Babri	Raskola	Bissamacuttack	Rayagada	Rajendra Palaka
Babri	Raskola	Bissamacuttack	Rayagada	Dodaka Palaka
Babri	Raskola	Bissamacuttack	Rayagada	Subash Biyusika
Babri	Raskola	Bissamacuttack	Rayagada	Kasinath Palaka
Patamguda	Karlghati	Gudari	Rayagada	Arjun Sabar
Patamguda	Karlghati	Gudari	Rayagada	Siba Kimbo
Patamguda	Karlghati	Gudari	Rayagada	Gopi Mambalka
Patamguda	Karlghati	Gudari	Rayagada	Baidei Sabar
Tada	Raskola	Bissamacuttack	Rayagada	Bhima Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Tulu Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Topa Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Panda Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Rushi Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Pati Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Tiara mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Rama Mambaka
Tada	Raskola	Bissamacuttack	Rayagada	Drain Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Lalu Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Maita Dibaka
Tada	Raskola	Bissamacuttack	Rayagada	Mutula Dibaka
Tada	Raskola	Bissamacuttack	Rayagada	Jagari Kumbruka
Tada	Raskola	Bissamacuttack	Rayagada	Dhana Dibaka
Tada	Raskola	Bissamacuttack	Rayagada	Nakul Mambalka

Village	GP	Block	District	Name of the Farmer
Tada	Raskola	Bissamacuttack	Rayagada	Tripura Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Langasa Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Krushna Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Iswara Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Mangatedi Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Raju Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Mina Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Amina Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Chilika Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Suma Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Gobinda Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Badaru Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Kandha Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Ganga Mambalka
Tada	Raskola	Bissamacuttack	Rayagada	Sathi Mambalka

ANNEXURE-II

Stakeholders Consulted for Key Informant Interview (KII)

Sl.	Name / Designation
1	The Head Master, Primary School, Raskola, Bissamacuttack Block
2	Supply Inspector, Bissamacuttack
3	Welfare Extension Officer, Bissamacuttack
4	Ms. Sushila Shabar, CDPO, Bissamacuttack
5	Mr. Sibanand Singh, BPC, Mission Shakti, Bissamacuttack
6	Laxmi Sabar, Chairperson, Gudari Block
7	Kaushalya Nanda, Sarapanch, Karlaghati Gram Panchayat
8	Gangadhar Baliarsingh, Gram Panchayat Officer in charge of PDS supply
9	Sumita Hikabadi, ASHA, Papikhal
10	Dr C R Das, Senior Research Officer, Former OMM in charge NCDS, Bhubaneswar
11	Mr Siba Sankar Das, CINI NGO, Bissamacuttack

Notes

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