

**BASELINE SURVEY**  
**RAYAGADA DISTRICT 2017-18, Phase – II**  
(Special Programme for Promotion of Millets in Tribal Areas of Odisha/  
Odisha Millets Mission)



**Nabakrushna Choudhury Centre for Development Studies, Odisha**  
(An ICSSR Institute in Collaboration with the Govt. of Odisha)  
AUGUST 2020

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\* See next page for details of NCDS Study Team

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## FOREWORD

The seeds for the "Special Programme for Promotion of Millets in Tribal Areas of Odisha" (Odisha Millets Mission, OMM) were sown at a consultation meeting held on 27 January 2016 at Nabakrushna Choudhury Centre for Development Studies (NCDS) under the Chairmanship of the then Development Commissioner-cum-Additional Chief Secretary (DC-cum-ACS), Government of Odisha, and Chairperson, NCDS, Mr. R. Balakrishnan (currently, Chief Advisor, Government of Odisha). The consultation meeting had representatives from different line departments of the Government of Odisha, members of different civil society groups from across the country and from within the state (which, among others, included the Alliance for Sustainable and Holistic Agriculture (ASHA), the Millets Network of India (MINI), the Revitalizing Rainfed Agriculture (RRA) Network of India), that brought in their experiences, and the academia that included among others the then Chairperson of Karnataka Agricultural Price Commission, Dr T. Prakash. As per the decision taken at the consultation meeting, NCDS submitted a proposal to the Government of Odisha on the revival of millets. Lo and behold, there was an announcement in the budget speech of 18 March 2016 conveying that the Government of Odisha intends to revive millets. This led to a series of interactions and a memorandum of understanding (MoU) was signed on 27 February 2017 between the Directorate of Agriculture and Food Production (DAFP) as the state level nodal agency that would monitor and implement the programme, NCDS as the state secretariat that would also anchor the research secretariat, and Watershed Support Services and Activities Network (WASSAN) that would anchor the programme secretariat as part of the state secretariat.

It was in 2017-18 that budget was apportioned for 30 selected blocks, the Phase I blocks. In principle decision was taken to extend the programme to another 25 blocks in 2018-19, the Phase II blocks, a further 17 blocks in 2019-20 (that includes 10 under the state plan and seven under District Mineral Fund (DMF), Keonjhar), the phase 3 blocks, and an additional 4 blocks under DMF, Sundargarh in Kharif 2021, the phase 4 blocks. The MoU with NCDS for 7 blocks under DMF Keonjhar was signed on 13 December 2018 and for 35 phase 2 and phase 3 blocks under state plan were signed on 25 February 2019. The current set of 10 Baseline Reports are based on surveys conducted during October – November – December 2019 in three blocks where the programme intervention had already started.

In each of the block from the list provided by the facilitating agency through the Programme Secretariat had all the names of the participating farmer, village and Gram Panchayat. We first selected two of the Gram Panchayats randomly, and then, from each of the selected gram Panchayat we selected two villages randomly. From each selected village, 15 farmer households were selected randomly and from a listing of non-participating farming households, five farmer households were selected. If a village did not have 15 participants then the sample size of non-participating households was increased so that the total number of sample households from each village was 20. As per this design, each block would have a sample of 80 farmer households. All respondent households were asked question regarding the scenario before the intervention of the programme, and hence, they were canvassed the same schedule. The survey was conducted by a third party. Samples of the surveyed households were re-visited by the research secretariat team for scrutiny and validation of data. Besides, during this visit, focus group discussions were also conducted in some villages by the research secretariat team. The lead author for the current baseline report on Koraput is Dr. Sitakanta Sethy with assistance from Mr. Arakshit Patra, Ms. Roma Choudhury and Mr. Dharmajit Biswal along with other members of the study team. As Principal Investigator of the team, I compliment all the members for their effort.

The Odisha Millets Mission (OMM), as per a recent report that I authored, comparing first year outcome with the baseline report of the phase one block indicate that the yield has more than doubled and the value of produce has more than trebled in the year one of its intervention. In 2019, Mandia procurement in *Swabhimananchal* of Malkangiri district was the first ever procurement of any grain in the region even after 70+ years of independence. In 2020, in spite of the pandemic, Ragi Ladoos are being piloted as a consumption awareness campaign through Integrated Child Development Scheme (ICDS) in Keonjhar and Sundargarh under respective DMF. These expansions are also brining in opportunities of convergence across line departments, which is an important development for any pro people public policy engagement.

On the research front there have been engagements with a consortium of universities and institutes led by University of Cambridge through TIGR<sup>2</sup>ESS (Transforming India's Green Revolution by Research and Empowerment for Sustainable food Supplies). Agreements have been signed with Indian Institute of Millets Research (IIMR), Hyderabad, and Central Food

Technological Research Institute (CFTRI), Mysuru, Fobenius Institute at Goethe University, Frankfurt and also exploring a research collaboration with them that includes scholars from Groningen University among others.

There has been interest in Odisha Millets Mission from the central as also other state governments. The unique institutional architecture that brings together the Government, civil society and the Academia led by NCDS to complement and supplement each other has been appreciated by policy makers (including National Institution for Transforming India, NITI Ayog), civil society and the Academia. So, the chant of OMM continues to reverberate.

Srijit Mishra  
Director, NCDS

## ACKNOWLEDGEMENT

Preparation of this report has required concerted efforts of a number of individuals and institutions whose substantial contribution needs to be acknowledged. First and foremost, we would like to express our sincere gratitude to the millet farmers, their associations and leaders, the various devoted, dedicated and motivated Officers from the State Government especially R. Balakrishnan, IAS, Chief Advisor, Govt. of Odisha and the former Chairperson, Nabakrushna Choudhury Center for Development Studies (NCDS) and the present Chairperson, (NCDS) Mr. Suresh Chandra Mohapatra, IAS, DC cum ACS; Dr. Saurabh Garg, Principal Secretary, DAFE; Mr. Suresh Vashishth, Special Secretary, DAFE; Dr. M. Muthukumar, Director, DAFP; Mr. Pradeep Rath, JDA, Millets and Integrated Farming; Ms. Kalpana Pradhan, AAO, DAFP. The then Chairman, NCDS Mr. Asit Kumar Tripathy, IAS, DC-cum-ACS, Govt. of Odisha; Mr. P. K. Mohapatra, IAS, Agriculture Production, Commissioner; Mr. Manoj Ahuja, IAS, former Principal Secretary, Dept. of Agriculture and Farmer's Empowerment (DAFE), Mr. Bhaskar Jyoti Sarma, IAS, DAFE; Mr. Hari Ballav Mishra, IAS, former Director, Directorate of Agriculture and Food Production (DAFP). Dr. Ananda Chandra Sasmal, Agronomist, DAFE; Mr. Ansuman Pattnayak, Assistant Agriculture Officer, Farm, Millets, DAFP, and Mr. Sanjay Kumar Pani, AAO, DAFP.

We express our sincere thanks and gratitude to various District level Officers of Rayagada District, particularly to Shri Pramod Kumar Behera, OAS (SAG), Collector and District Magistrate; Mr. Rabindranath Khuntia, Dy. Director Agriculture, Mr. Religious Beck, District Agriculture Officer, Muniguda; and Mr. Bibhudendu Dey, Scheme Officer and the respective Agriculture Officers of KSHIPUR, Kalyansinghpur, Chandrapur, and Bisamcuttack Blocks as well.

We express our sincere gratitude to Mrs. Sumati Jani, OFS, Secretary, NCDS; Mr. Srikanta Ratha, former Administrative Officer; Mrs. M. Pani, Computer Programmer; Mr. D. B. Sahoo, PA to the Director; Mr. P K Mishra, Sr. Assistant; Mr. P K Mohanty, Jr. Accountant; Mr. K Mishra, Jr. Stenographer; Mr. P K Mallia, Computer Literature Typist; Mr. Niranjana



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Our special thanks to the members of the OMM Programme Secretariat at the Watershed Support Services and Activities Network (WASSAN), especially to Mr. Dinesh Balam, the Consultant at the Secretariat; Mrs. Ashima Choudhury, State Coordinator; Mr. Ramani Ranjan Nayak, the Regional Coordinator, all the personnel involved in data collection and compilation from the Green India; Mr. Araskhita Patra, Research Assistant (RA), NCDS; Ms. Roma Choudhury, RA, NCDS and Mr. Dharmajit Biswal, RA, NCDS, who have played a vital role in preparing and publishing the final report. Credit to Mr. Araskhita Patra has verified, compiled and tabulated the Excel Sheet data being submitted by the Green India (GI).

We express our sincere thanks to Dr. C. R. Das, Sr. Research Officer and Dr. Biswabas Patra, Research Officer also the Project coordinators at NCDS for their kind guidance and critical but constructive suggestions. Last but not the least, for the successful programme planning and implementation as well as their active coordination during data collection for this report credit goes to all the Facilitating Agencies working in Muniguda, Chandrapur, Kashipur, Bisamcuttack and Kalyansinghpur Blocks in Rayagada District i.e. the PRABHAT, (Regional Centre for Development Cooperation (RCDC), NIRMAN, Agrabamee and Odisha Professional Development Service Consultants (OPDSC). Our sincere thanks to their Community Resource Persons (CRPs) and Field Coordinators for coordinating the data collection from the households and coordinating the village level Focused Group Discussions (FGDs).

Dr. Sitakanta Sethy  
Post Doctoral Fellow

# EXECUTIVE SUMMARY

## 1. Survey Area

- 1.1 Under the “Special Programme for the Promotion of Millets in Tribal Areas of Odisha or the Odisha Millet Mission (OMM)” was begun in the Kharif 2017. Rayagada comes within the seven Districts. In the Phase - I, three Blocks of the District were covered. To expand the programme under Phase – II, the Baseline Survey was conducted in Muniguda, Chandrapur, Kashipur, Bisamcuttack and Kalyansinghpur Blocks. The present Baseline Survey Report is based on the findings of the said Study.
- 1.2 Across the five Blocks, total 2020 Households (HHs) are proposed to be covered under the programme; out of that across the five Blocks in Rayagada District 398 HHs were surveyed and from that 347 HHs are cultivating millets. By adopting random sampling method 80 HHs each from Bisamcuttack, Kalyansinghpur, Kashipur, Muniguda Blocks and another 78 HHs from Chandrapur Block are surveyed under the Baseline Survey. To be specific, as observed out of the total surveyed HHs 65 HHs in Bisamcuttack Block, 78 HHs in Kalyansinghpur, 76 HHs in Kashipur, 61 HHs in Muniguda and another 67 HHs in Chandrapur Block surveyed are cultivating millets.

## 2 Socio-economic Profile of the Respondent HHs

- 2.1 As observed by the Baseline Survey 2017-18, from the surveyed HHs 94.5 per cent belong to Scheduled Tribe (ST), 4.5 per cent belong to Scheduled Caste (SC) and Only 1 per cent belonged to the Other Caste (OC)category.
- 2.2 Among the respondent HHs, across the five Blocks in Rayagada District it is observed that 51.02 percent belong to female and 48.98 percent belong to the male category.
- 2.3 As surveyed, among the respondent HHs, across the five Blocks in Rayagada District it is also observed that 96.48 percent belong to Hindu Religion and 3.52 percent belong to the Christian Religion.
- 2.4 Across the five Blocks in Rayagada District, in the Baseline Survey 2017-18 found that 94.22per cent HHs are engaged in agricultural cultivation activities, 0.50 per cent are engaged as Agricultural Laborer, 0.25 percent HH are engaged in Business and not a single HH is engaged in collection of the Minor Forest Produces (MFPs). It was also found that across the five Blocks 0.75per cent HH are engaged in Service and 4.27 are engaged in other/ allied activities.
- 2.5 As per the Baseline Survey, across the five Blocks in the District it was found that out of the total HHs, 9.05 per cent houses are *Pucca*, 50.25 per cent houses are Semi *Pucca* and another 40.70 per cent houses are *Kutch*a houses as their dwelling units.

Moreover, out of the total HHs surveyed 99.50 percent belonged to the Below Poverty Line Category (BPL) and only 0.50 percent belonged to the Above Poverty Line (APL) category.

### 3 Production

- 3.1** In Rayagada District, across the Baseline conducted five blocks it was found that out of the total respondent HHs, all 347 HHs are cultivating Millets in 151.64 hector of land with a total production of 725.61 quintals. In the same way, 341 HHs (98.27 per cent) are cultivating *Ragi* (Finger Millets) in 130.17 hectors of land with a production of 618.41 quintals and 4.8 quintals per hector. 39 HHs (11.24 percent) are cultivating *Suan* (Little Millets) in 12.28 hector of land, producing 63.25 quintals and yield rate of 5.2 quintals per hector. 14 HHs (4.03 per cent) are cultivating *Janha* and producing 26.10 quintals per hector and yield rate of 55 quintals per hector. Another 22 HHs (6.34 per cent) are cultivating *Kangu* in 4.45 hector with a production of 17.85 quintals and yield rate of 4 quintals per hector.
- 3.2** In Bisamcuttack Block it was observed that 65 respondent HHs are cultivating Millets in 29.03 hector of land, producing 127.50 quintals at the yield rate of 4.4 quintals per hector. In the Block, the majority i.e. 65 HHs are cultivating *Ragi* in 25.79 hector of land, producing 110.50 quintals with a yield rate of 4.3 quintals per hector. Moreover, in the Block the yield rate of *Suan*, *Janha* and *Kangu* are 6 quintals per hector, 6.4 quintals per hector and 2.5 quintals per hector respectively. In addition to that it was also found that in the Block some farmers are cultivating more than one variety of millets.
- 3.3** In Chandrapur Block, in the Baseline Survey it was found that 67 respondent HHs are cultivating millets in 34.2 hector of land, producing 119.5 quintals. The majority 63 HHs (94.0 per cent) of the respondents HHs are cultivating *Ragi* in 26.7 hector of land, producing 82.8 quintals. The average yield of *Ragi* is 3.1 quintals per hector, *Suan* 5.6 quintals per hector, *Janha* 5.2 quintals per hector and *Kangu* 3.1 quintals per hector. In addition to that it was also found that in the Block some farmers are cultivating more than one variety of millets.
- 3.4** In Kalyansinghpur Block, it was observed that 78 respondent HHs are cultivating Millets in 27.6 hector of land, producing 170.8 quintals. The majority of 77 respondents HHs are cultivating *Ragi* in 24.5 hector of land, producing 152.7 quintals. The average yield of *Ragi*, *Suan*, *Janha* and *Kangu* in the Block is 6.2 quintals per hector, 5.5 quintals per hector, and 6.1 quintals per hector. Not a single family cultivated *Janha*; however, it was also found that in the Block some farmers are cultivating more than one variety of millets.
- 3.5** In Kashipur Block, in the Baseline Survey it was found that 76 respondent HHs are cultivating millets in 38.9 hector of land, producing 221.8 quintals with yield rate of 5.7 quintals per hector. The majority 75 respondents HHs are cultivating *Ragi* in 31.6 hector of land, producing 188.54 quintals. The average yield of *Ragi* is 6 quintals per

- hector, *Suan* 4.5 quintals per hector, *Janha* 6.2 quintals per hector and *Kangu* 4.5 quintals per hector. In addition to that it was also found that in the Block some farmers are cultivating more than one variety of millets.
- 3.6 In Muniguda Block, in the Baseline Survey it was found that 61 respondent HHs are cultivating millets in 21.9 hector of land, producing 86.1 quintals with yield rate of 3.9 quintals per hector. The majority 61 respondents HHs are cultivating *Ragi* in 21.7 hector of land, producing 84.1 quintals. The average yield of *Ragi* is 3.9 quintals per hector and *Suan* 9.9 quintals per hector. Not a single respondent HH cultivated *Kangu* or *Janha* in the Block. In addition to that it was also found that in the Block some farmers are cultivating more than one variety of millets.
- 3.5 Across the five Blocks in the District, as shared by the 231 respondent HHs, out of the total 58.04 per cent HHs used good quality if seeds, 41.96 per cent used average quality and not a single respondent HH used bad quality millets seeds during their *Kharif* Session cultivation.
- 3.6 As far as the package of practices being used by the respondent HHs for millets (*Ragi, Suan, Janha and Kangu*) are concerned, across the five Blocks in Rayagada District it is found that 75 HHs (22 per cent) are adopting broadcasting, 267 HHs (76.8 per cent) per cent using the Line Transplantation/ Line Sowing (LT/LS) method, 1 HH (0.3 per cent) cultivating millets by adopting the System of Millet Intensification (SMI) and another 3 HHs (0.9 per cent) are using the 1+ method.
- 3.7 Across the five Blocks in the District, the Baseline Survey 2017-18 found that the corresponding production of millets by adopting Broadcasting method is 141.6 quintals, adopting the LT/LS with a production of 446.6 quintals, adopting the 1+ method the production is 26 quintals and adopting the SMI method the production is 4 quintals with a yield rate per hector of 6 quintals, 3.7 quintals and 9.9 quintals per hector respectively.

## 4 Consumption

- 4.1 In Rayagada District, across the five Blocks the pattern of consumption of millets based recipes was surveyed and found that the highest of 89.20 per cent of the respondents HHs are taking millets during the Summer Season. It was followed by 86.43 per cent in the Winter Session and another 83.17 per cent in Rainy Season.
- 4.2 The Baseline Survey 2017-18 conducted across the five Blocks in the District also reveals that the consumption of millets based recipes during different meals of a day (not mutually exclusive rather independent); it is observed that the highest number (89.2 per cent) are taking millets based recipes at the morning, followed by 89.2 per cent during their lunch, 21.4 per cent during the dinner and another 36.9 per cent of the respondent HHs are taking millets based recipes during the evening time.

- 4.3** Findings of the Baseline Survey 2017-18 related to the form and types of millet based recipes consumed by the respondent HHs across the five blocks in Rayagada District observed that 89.2 per cent of the respondent households are taking *Mandia Jau* (Porridge), 88.4 per cent taking Millet Cake, 25.4per cent taking *Tempo* (a Semi Liquid Recipe), 35.4 per cent taking and another 36.7per cent of the respondent HHs are taking *Mandia Torani* (fermented Ragi) on a day to day basis.

## **5 Processing and Marketing of Millets**

- 5.1** Across the five Blocks in Rayagada District, the Baseline Survey found that 48.2 per cent of the respondent HHs are processing millets manually that includes Dehusking, De-stoning and Milling, 15.1per cent are doing it through Machines that is located far away from their village, and another 25.9 per cent of the respondent HHs are adopting both the methods but as and when required.
- 5.2** Marketing of the millets by the respondent HHs in the District is not mutually exclusive. As per the Baseline Survey 2017-18, around 22.6per cent HHs sell their produce in the nearby Weekly Hat, 18.3per cent sell to the Local Trader/ Middle Man who usually comes to their village and collects it himself. Another 4.3 per cent of the respondent HHs sell their produce to the local Money Lender as they had borrow money whenever there was a need, however, it was also observed that only 7 HHs (1.8 per cent) are selling their produce at the local Mandi/ LAMPS.

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## **ABBREVIATIONS**

AAO	: Assistant Agriculture Officer
AL	: Agricultural Labour
AP	: Andhra Pradesh
ATMA	: Agricultural Technology Management Agency
DDA	: Deputy Director, Agriculture
FGD	: Focused Group Discussion
Ha	: Hector
HHs	: Households
MSP	: Minimum Support Price
NAL	: Non Agricultural Labour
NAM	: National Agricultural Market
NFSM	: National Food Security Mission
NSSO	: National Sample Survey Organization
OC	: Other Caste
OMM	: Odisha Millets Mission
PDS	: Public Distribution System
ST	: Scheduled Tribe
SC	: Scheduled Caste
WASSAN	: Water Support Services and Activities Network

# 1

## INTRODUCTION

### 1.1 Background

According to various literature, evolution of millets cultivation dates back to Prehistoric Period and its farming system found to be very primitive. It has been favored by the farmers as well as the people at large because of its climate and draught resilient capacity, short duration crop, nutritional value, healthy and tasty recipes. In India, since many decades millet as a food crop was just next to paddy. Now days the food prepared from millets is consumed by less people due to availability of subsidized rice with a nominal price by the Government at all the Public Distribution System (PDS). Moreover the article published in the Times of India, Coimbatore Edition, August 12, 2014 issue also argues that the reason of decline in millet cultivation is attributed to easy availability of rice and wheat in the PDS that are spread all over India.

Advent of a variety of cash crops and readily availability of the modern, well packed and eye catching recipes anywhere and everywhere. However, in India millet based recipes are still found sustained mostly in the tribal concentrated Districts due to its many potential benefits among the remote, rural and tribal households in a number of States including Odisha. The Central Government “Initiative for Nutritional Security through Intensive Millet Promotion” (INSIMP) in 2011-12 promotes millets as nutri-cereals. It aims at increasing production of millets throughout the Country through promotion of post harvest harvesting, establish units for its processing and value addition. Establishment of the Composite Millet Processing Centers with a cost of Rs.4 Lakhs is expected to handle de-stoning, de-hulling, flaking and Rava-making. This initiative is expected to at least revive millet cultivation in the tribal concentrated regions.

### 1.2 District Profile

Rayagada district was divided into four districts on October 1992; Rayagada District was one of them. Rayagada district is the third largest district in Odisha in terms of its geographical area and it is fifteenth in terms of population including a number of primitive tribal groups. It is

full of forests, waterfalls, terraced valleys, meadows especially Bansadhara and Nagabali Rivers are flowing in the district. As per the 2011 Census, the district has an area of 7073 Sq. Kilometers with 9.7 lakhs of population (Table 1.1). The District accounts for the 4.54 per cent of the State's territory and shares 2.31 per cent of the State's total population. The density of population is 137 per Square Kilometer as against 270 persons per Square Kilometers of the State. In the district there are 2667 villages including 200 un-inhabited, covering 11 Blocks, 11 Tahsils, and 2 Sub Divisions. It has 139514 (14.4 per cent) Scheduled Caste (SC) and 541905 (56.0 per cent) Scheduled Tribe (ST) population.

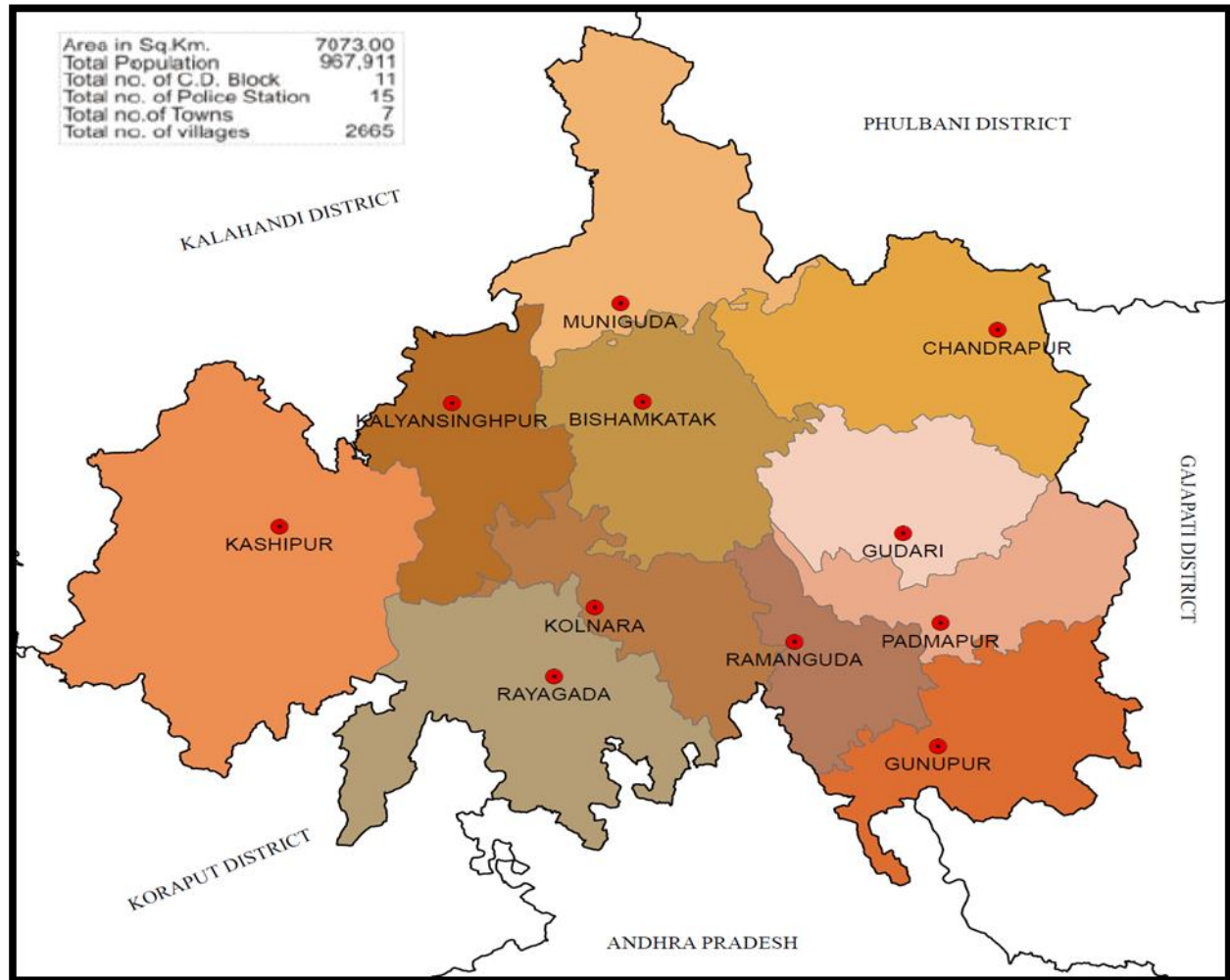
Rayagada is located at the South part of the State, lies between 19 Degree 0' to 19 Degree 58' North Latitude and bounded by the Kandhamal District in the North, Andhra Pradesh in the South, and Rayagada District in the West. The climatic condition is generally hot with high humidity during May and June and cold during November and December. The monsoon generally breaks during the month of June. Annual rainfall of the District was 1165.8mm in 2011, which is lower than the normal rainfall i.e. 1285.9mm. As per the District at a Glance 2016 for Rayagada in the financial year 2014-15, the total production of major crops was 2953400 Quintals and Ragi production was 75955 Quintals.

### **1.3 Objectives**

Rayagada District consists of 11 Blocks (Fig. 1.1), during 2016-17, while OMM began its Phase – I Programme in as many as three Blocks consisting of Gudari, Gunpur and Rayagada. The objective of the Baseline Survey 2017-18 was to cover the remaining five Blocks consisting of Muniguda, Chandrapur, Bisamcuttack, Kalyansinghpur and Kashipur to cover the Blocks under the OMM. The Survey intended to collect primary data from the millets farming households at the village level on the current practices on cultivation including production, consumption, processing and marketing. It was thought that the collected information would be working as background information for planning and implementing the programme as a whole. The major objectives of the Baseline Survey are to:

- The explore and assess the socio-economic condition of the HHs;
- Outline millet production, productivity and package of practices;
- Examine the consumption pattern of millets;
- Elucidate the method of processing and mode of marketing.

**Fig-1.1: Map of Rayagada (Phase – II Blocks)**



Source: <http://gisodisha.nic.in/Block/RAYAGADA.pdf>

**N.B:** Baseline Survey 2017-18 was conducted in the Bisamcuttack Block, Chandrapur Block, Kalyansinghpur Block, Kashipur Block and Muniguda Block (shown on the Political Map of Rayagada District (above) for implementing the Project titled “Special Programme for Promotion of Millets in Tribal Areas of Odisha” under Phase – II



**Table 1.1: Key Indicators of Rayagada District**

<b>Indicators</b>	<b>Value</b>
<b>Census 2011</b>	
Population (in Lakh)	9.7
Male (in Lakh)	4.7
Female ( in Lakh)	5.0
Scheduled Caste (in Lakh)	14.4
Scheduled Tribe (in Lakh)	56.0
Others (in Lakh)	29.6
HHs (in Lakh)	2.0
Average HH Size	4.8
Sex Ratio	1952
<b>Workers</b>	
Total Worker (In Lakh)	4.7
Main Worker (In Lakh )	2.3
Marginal Worker (In Lakh )	2.4
Non-Worker (In Lakh )	5.1
Work Participation Rate (WPR, %)	48.3
Cultivator as % of Total Worker	49.8
Agricultural Labourers as % of Total Worker	4.8
Literacy Rate (%)	49.8
Total Geographical Area (sq.km)	7073
<b>Land Use Pattern (Area in '000 ha) (2014-15)*</b>	
Forest	101
Land put to Non-agricultural use	30
Barren and Non-Cultivable Land	204
Permanent Pasture and Other Agricultural Land	10
Net Area Sown	144
Cultivable Waste Land	9
Old Fallow	23
Current Fallows	42
Miscellaneous Trees and Groves	9
<b>Agriculture, 2014-15 *</b>	
Fertilizer Consumption (kg/ha)	54.8
Irrigation, Kharif ('000 ha)	71.6
Irrigation, Rabi ('000 ha)	28.1
<b>Other Information</b>	
Proportion of Villages Electrified (as on March 2014)	28.8
Credit Deposit Ratio (as on December 2015)	38.2
No. of Anganwadi Centres, 2014-15	191257
No. of Job Card Issued (cumulative, March 2015)	184488
HH provided employment through MGNREGS, cumulative 2014-15	75826

Source: *District Statistical Hand Book, Rayagada, 2011*

\*District at a Glance-2016,

Note: MGNREGS is Mahatma Gandhi National Rural Employment Guarantee Scheme

## **1.4 Methodology**

### **1.4.1 Universe and the Sample Design**

To undertake the Baseline Survey Muniguda, Chandrapur, Kashipur, Bisamcuttack and Kalyansinghpur Blocks have been selected by the Odisha Millets Mission's Programme as well as the Research Secretariat as it is one among the first seven districts. Odisha State Government through its Department of Agriculture and Farmers Empowerment has already introduced the programme entitled "Special Programme for Promotion of Millets in Tribal Areas of Odisha". Under the Phase-II, the five Blocks constituting Muniguda, Chandrapur, Kashipur, Bisamcuttack and Kalyansinghpur Blocks are selected. Nevertheless, all the respondent households including the potential beneficiary millets farmers from these Blocks have been selected in due consultation with the local farmers, NGO & CSOs being engaged as the Facilitating Agencies (FAs), and the District Agriculture Office (DAO), Govt. of Odisha.

From the list being provided by the OMM Programme Secretariat, there were 2090 HHs covering 228 participant and 792 non-participant households, out of that 398 surveyed participant/ beneficiary farmer households spread across 175 villages, 31 Gram Panchayats covering the five Blocks in Rayagada District (Table 1.2). From these, first stage sampling selected two Gram Panchayats randomly from each block; second stage sampling was to select two villages from each of the selected Gram Panchayat. The third stage sampling had two parts, one was to select 10 households randomly from each selected village from the list of participating farmer households, the other part was to prepare a village listing of non-participating farmer households and then select another 10 households randomly and if the participating households in the village is less than 10, then increase the number of non-participating households in the sample so that the total sample in the village is 20. By design, 80 households have been surveyed from each block except 78 HHs in Chandrapur Block due to availability. From the 398 surveyed households selected for the Baseline Survey 2017-18 under Phase - II, total 126 were participant households and 272 were non-participant households.

Out of the total enlisted 2090 farming Households 376 HHs (21.3 per cent) in Bisamcuttack Block, 385 HHs (20.3 per cent) in Chandrapur Block, 615 HHs (13 per cent) in

Kalyansinghpur Block, 162 HHs (49.4 per cent) in Kashipur Block and another 552 HHs (14.5 per cent) in Muniguda Block were planned to be covered under the OMM Programme.

**Table 1.2: HHs Surveyed in Rayagada District**

Block	Programme HHs (No.)	Surveyed HHs (No.)	Sample HHs		% of HHs covered under the Survey
			Participant in 2017-18	Non - Participant in 2017-18	
Bisamcuttack	376	80	22	58	21.3
Chandrapur	385	78	28	50	20.3
Kalyansinghpur	615	80	40	40	13.0
Kashipur	162	80	22	58	49.4
Muniguda	552	80	14	66	14.5
Total	2090	398	126	272	19.0

Source: WASSAN & Field Survey

In Bisamcuttack Block under the Chancharaguda Gram Panchayat (GP), out of the four villages, 48 HHs consisting of 28 HHs from Souraguda Village and 20 HHs from Kurugudi Village and under Kutraguda GP, 34 HHs in Lahargudi and 51 HHs from Kusumgudi were there. Out of the total 376 HHs, 80 HHs (21.3 per cent) were taken on the basis of random sampling for HH Baseline Survey and data collection. For the Baseline Survey 2017-18 in the Block 22 participating HHs, and another 58 non-participating HHs were selected.

In Chandrapur Block, under Turuguda GP 125 HHs in Lundrubadi Village and 80 HHs in Dhelapada Village; under Piskapanga GP 18 HHs in Ratnaguda Village and 41 HHs in Tangidipada Village were there. Out of the total 385 HHs, 78 HHs (20.3 per cent) were taken on the basis of random sampling for HH Baseline Survey and data collection. For the Baseline Survey 2017-18 in the Block 28 participating HHs, and another 50 non-participating HHs were selected.

In Muniguda Block, under Patraguda GP 38 HHs in Tala Chhelianala Village and 56 HHs in Uppar Chhelianala Village and under the Sibapadar GP, 52 HHs in Drukulima Village and 37 HHs in Kardanga Village are there. Out of the total 552 HHs, 80 HHs (14.5 per cent) were taken on the basis of random sampling for HH data collection. For the Baseline Survey 2017-18 in the Block 14 participating HHs, and another 66 non-participating HHs were selected.

In Kalyansinghpur Block, under Majhiguda GP 62 HHs in Kataguda and 44 HHs in Raghunathpur village and under Budaguda GP 42 HHs in Kandakora and another 69 HHs in Gurutuli Village are there. Out of the total 615 HHs, 80 HHs (49.4 per cent) were taken on the basis of random sampling for HH data collection. For the Baseline Survey 2017-18 in the Block 40 participating HHs, and another 40 non-participating HHs were selected.

Likewise in Kashipur Block, under Mandibisi GP in Kenduguda 20 HHs, 70 HHs in Nalachuan Village and again under the Khurigaon GP 75 HHs in Siriguda and 34 HHs in Panaspadar are there. Out of the total 162 HHs, 80 HHs (19 per cent) were taken on the basis of random sampling for HH data collection. For the Baseline Survey 2017-18 in the Block 22 participating HHs, and another 58 non-participating HHs were selected.

#### **1.4.2 Data Collection, Compilation and Analysis**

After data collection and submission of the Schedules by the Green India (the agency engaged for collection of data), by using random sampling method 20 percent of the total households respondents i.e. 40 HHs each under 10 Revenue Villages covering 10 GPs in five Blocks of the same sample were visited by the NCDS Policy Research Team. The said team constituting three Research Assistants and lead by one Post Doctoral Fellow (PDF) did the Back Check Exercise to verify the already collected and submitted primary data by GI. In addition to that to supplement and compliment the findings made under the Baseline Survey, twenty numbers of Focused Group Discussions (FGDs) were conducted constituting both the Millets Farming and Non-Farming Households in each selected village.

The Baseline Survey Report is prepared based on both primary and secondary data. As mentioned above, the primary data was collected from the respondent HHs from Rayagada District by using the Pre-tested Interview Schedules (Annexure - 1) and the Focused Group Discussions (FGDs) in Annexure - 2. The secondary data on the geographical information, population, agricultural, education, irrigation, forest and institutions has been collected by using various published and unpublished sources including the 2011 Census.

## **1.5 Limitations of the Study**

The present Baseline Survey, under Phase - II is limited to only five Blocks of the Rayagada District that excludes the three blocks already covered under the Phase – I and three are yet to be covered. Due to the beginning of the harvesting session followed by both in and out migration, some of the household head and female respondents were found to be absent. After around two years of harvesting millets, it was very difficult for the respondents to memorize, calculate and inform the quantity of land in acres, produce in quintals and even the profit being made in cash.

## **1.6 Chapters**

The Baseline Survey has been divided into total six chapters including the current Introduction Chapter that has covered the key information about the District, major objective of the Study, the methodology followed as well as the major limitations. Chapter 2 elaborates the overall social and economic profile of the households surveyed. Chapter 3 discusses the details on the production including the package of practices during cultivation and harvesting. Chapter 4 explains the consumption pattern of millets by the selected HH respondents. Chapter 5 elucidates details about the processing and marketing of millets. Chapter 6 summarizes the major findings of the whole Baseline Study.

## 2

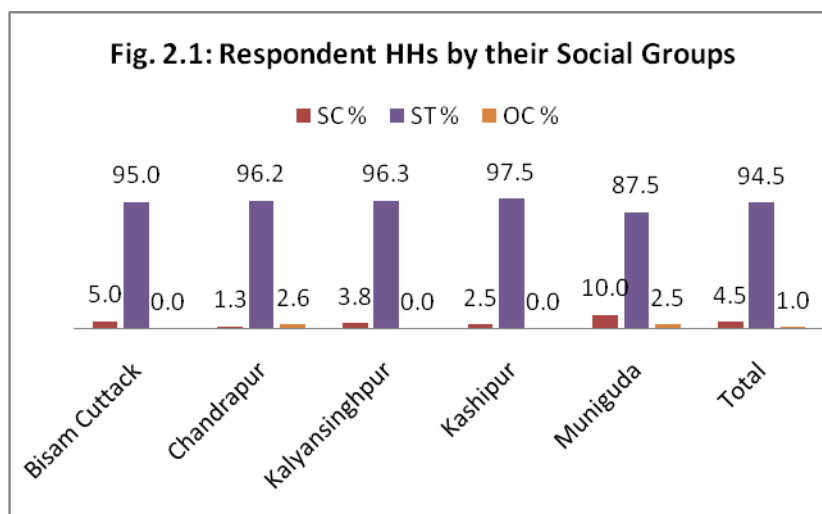
# SOCIO-ECONOMIC PROFILE OF THE HOUSEHOLDS SURVEYED

### 2.1 Introduction

This chapter looks into the social, economic and demographic profile of the respondent HHs under the Phase – II Baseline Survey. It includes the distribution of the HHs by their religion, social groups, and the population by their educational status and gender. It also discusses the incidence of poverty by their Government of Odisha accorded Below Poverty Line (BPL) or the proportion Above Poverty Line (APL) category. Distribution of the respondent HHs by their economic activities, which is not mutually exclusive as a household can have a multiple number of economic activities at the same time. It has also made an attempt to capture and analyze the dwelling house structure of the respondent HHs.

### 2.2 Social and Demographic Profile

Under the Baseline Survey (Table 2.1 and Fig.2.1) across the five Blocks in Rayagada District total 398 HHs were interviewed consisting of 376 HHs (94.5 percent) as the Scheduled Tribe (ST), 18 HHs (4.5 per cent) as Scheduled Caste (SC) and another 4 HHs (1.0 percent) as the Other Castes (OC). In Bisamcuttack Block there are 76 ST respondent HHs (95 percent), 4 SC HHs (5per cent) and are not single OC respondent HHs. Likewise, in Chandrapur Block there are 75 ST HHs (96.2 per cent) respondents, 1 SC household (1.3 per cent) and 2 respondent HHs



(2.6 per cent) belonged to the OC category. In Kalyansinghpur Block, among the respondent HHs there are 77 ST HHs (96.3 per cent), 3 SC HHs (3.8 per cent) and no OC HHs were there. In the same way, in Muniguda Block there were 70 HHs (87.5 per cent) were ST, 8 HHs (10.0



per cent) Respondent HHs were SC and another 2 HHs (2.5 per cent) were OC.

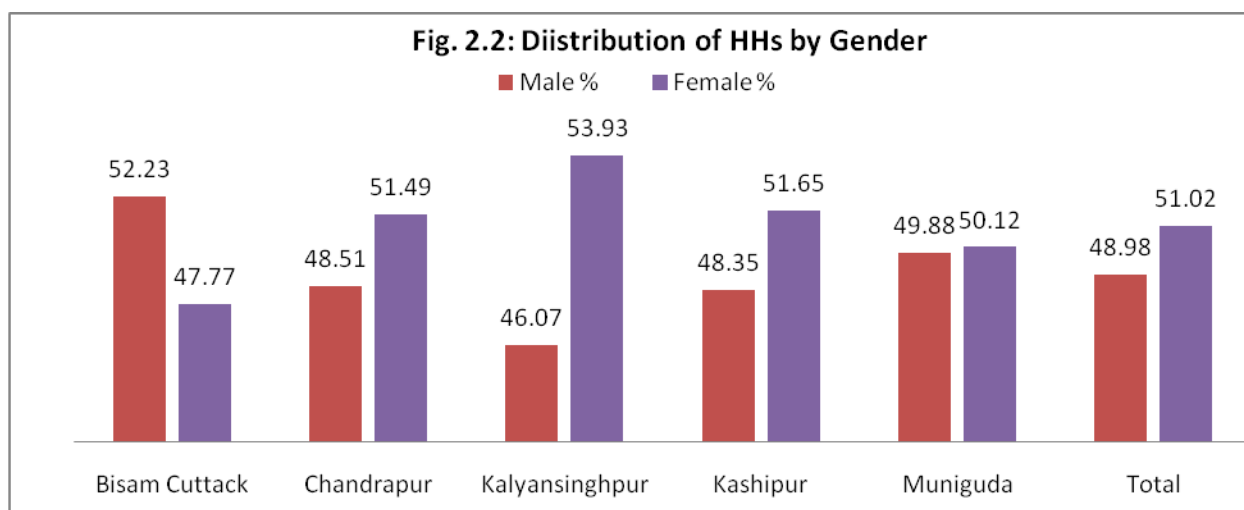
Data comparison (Table 2.1), among the five selected Blocks of Rayagada District reveals that highest number i.e. 78 farmer HHs (95 per cent) belonging to ST and out of the total 80 respondent farmer HHs are cultivating millets in Kashipur Block. Whereas in Muniguda Block, out of the total 80 HHs surveyed there were 70 millets farmers (87.5 percent) belonged to the ST Community. It is also observed that in the Rayagada District, across the five blocks SC respondent HH Farmers i.e. 18 HHs and their total number comes next to the number of the ST Farmers (376 i.e. 94.5 percent) and the OC Farmer number is counted as the least i.e. 4 HHs (1.0 per cent to the total).

**Table 2.1: Distribution of Respondent HHs across the Blocks by their Social Groups**

Block	SC		ST		OC		Total	
	No	%	No	%	No	%	No	%
Bisamcuttack	4	5.0	76	95.0	0	0.0	80	100.0
Chandrapur	1	1.3	75	96.2	2	2.6	78	100.0
Kalyansinghpur	3	3.8	77	96.3	0	0.0	80	100.0
Kashipur	2	2.5	78	97.5	0	0.0	80	100.0
Muniguda	8	10.0	70	87.5	2	2.5	80	100.0
Total	18	4.5	376	94.5	4	1.0	398	100.0

Source: Field Survey

Note: ST is Scheduled Tribe, SC is Scheduled Caste .and OC is Other Caste



The total respondent household population in Rayagada District, across the five Blocks constituting of Bisamcuttack, Chandrapur, Kalyansinghpur, Kashipur and Muniguda Blocks, as

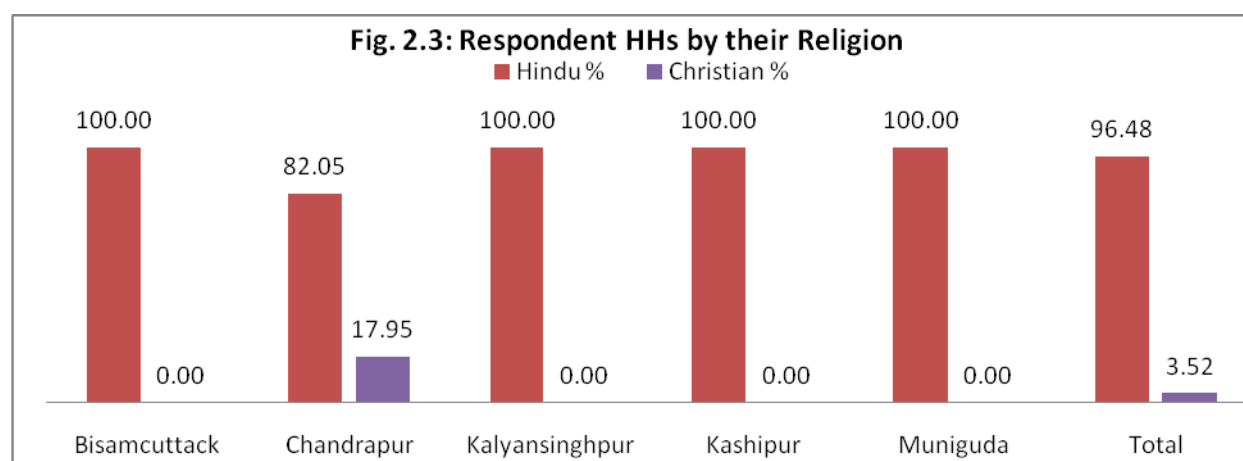
per the surveyed HHs (Table 2.2 and Fig.2.2) comes to 1817, consisting of 890 (48.98 per cent) male and another 927 female (51.2 per cent).

**Table 2.2: Distribution of HHs across Blocks by their Gender**

Blocks	Male		Female		Total	
	No	%	No	%	No	%
Bisamcuttack	176	52.23	161	47.77	337	100
Chandrapur	179	48.51	190	51.49	369	100
Kalyansinghpur	170	46.07	199	53.93	369	100
Kashipur	161	48.35	172	51.65	333	100
Muniguda	204	49.88	205	50.12	409	100
Total	890	48.98	927	51.02	1817	100

Source: Field Survey

As far as the respondent household's population in each Block of the District is concerned, it is 337 in Bisamcuttack Block, 369 in Chandrapur Block, 369 in Kalyansinghpur Block, 333 in Kashipur Block and another 409 in Muniguda block. Out of the total population, the sample population by gender it is 161 (47.77 per cent) in Bisamcuttack, 190 (51.49 per cent) in Chandrapur, 199 (53.93 per cent) in Kalyansinghpur, 172 (51.65 per cent) in Kashipur and 205 (50.12 per cent) in Muniguda Block. Comparison across the five selected Blocks in Rayagada District shows that in all the blocks female population is found to be higher to male.



In Rayagada District, across the five selected Blocks, distribution of the total respondent HHs consists of 80 HHs from Bisamcuttack, 78 HHs from Chandrapur, 80 HHs from

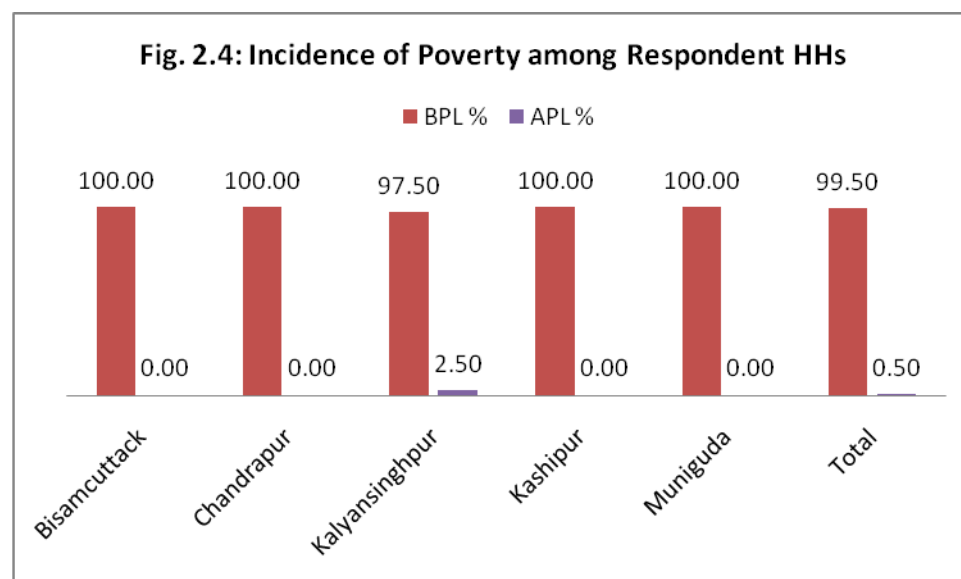
Kalyansinghpur, 80 HHs from Kashipur, and another 80 HHs from Muniguda Block. Distribution of the HHs Data across the five Blocks reveals that out of the total 398 respondent HHs, 384 HHs (96.48 per cent) belong to Hindu religion, 14 HHs (3.52 per cent) belong to Christian Religion (Table 2.3 and Fig.2.3). Moreover, no respondent HH belonged to any other religion other than the above two religions.

**Table 2.3: Distribution of Households across the Blocks by their Religion**

Block	Hindu		Christian		Total	
	No	%	No	%	No	%
Bisamcuttack	80	100.00	0	0.00	80	100.0
Chandrapur	64	82.05	14	17.95	78	100.0
Kalyansinghpur	80	100.00	0	0.00	80	100.0
Kashipur	80	100.00	0	0.00	80	100.0
Muniguda	80	100.00	0	0.00	80	100.0
Total	384	96.48	14	3.52	398	100.0

## 2.3 Incidence of Poverty among Respondent HHs across the Five Blocks in Rayagada

In Rayagada District, across the five Blocks and among the total number of the respondent HHs the



average incidence of poverty is found to be as high as 99.50 per cent (Table 2.4 and Fig. 2.4). It was observed that across the five blocks in the district, only 2 HHs (0.5 per cent) in Kalyansinghpur

Block belong to the Above Poverty Line (APL) Category. As observed, across the five Blocks and out of the total 398 respondent HHs as many as 396 households (99.50 percent) belonged to

the BPL<sup>i</sup> Category and the remaining 2 HHs (1.0 per cent) belonged to the Above Poverty Line (APL) that is found only in one Block of the District. In both Chandrapur and Kalyansinghpur Blocks, 78 HHs each were available for the primary data collection as well as FGD.

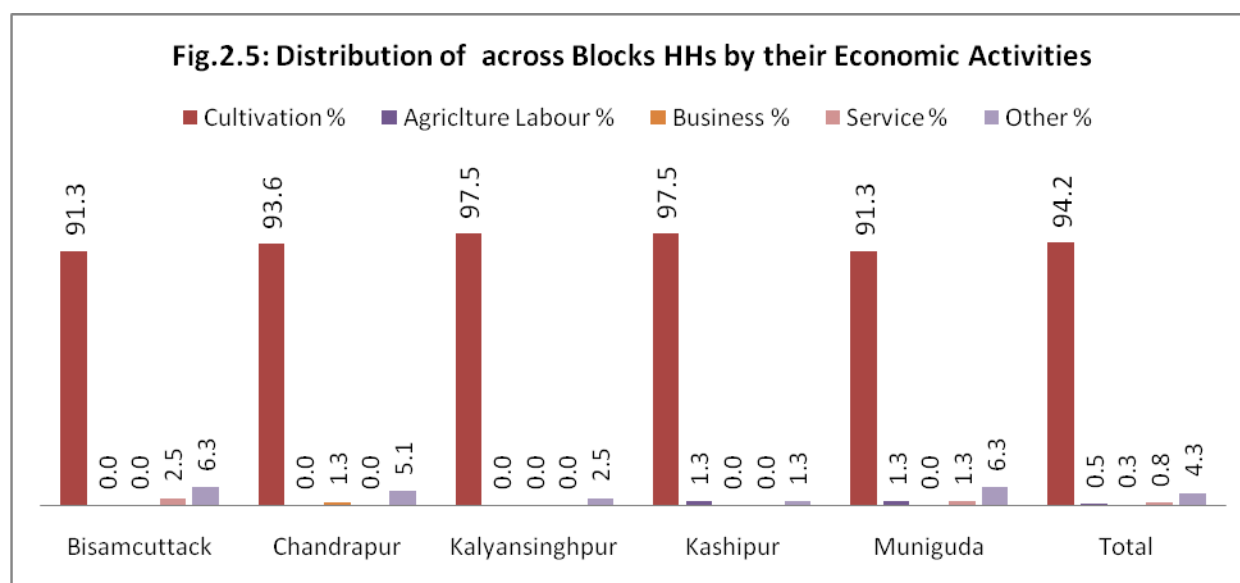
**Table 2.4: Incidence of Poverty across the blocks among the Respondent HHs**

Block	BPL		APL		Total	
	No	%	No	%	No	%
Bisamcuttack	80	100.00	0	0.00	80	100.0
Chandrapur	78	100.00	0	0.00	78	100.0
Kalyansinghpur	78	97.50	2	2.50	80	100.0
Kashipur	80	100.00	0	0.00	80	100.0
Muniguda	80	100.00	0	0.00	80	100.0
Total	396	99.50	2	0.50	398	100.0

Source: Field Survey

Note: BPL is Below Poverty Line and APL is Above Poverty Line

## 2.4 Economic Activities



An economic activity of a family consists of cultivation, business, service and a number of other activities that add on to the total income of the family. Information collected and compiled on the economic activities of the 398 respondent HHs (Table 2.5) has been analyzed and has also been shown in Fig.2.5.

**Table 2.5: Distribution of HHs across the Blocks by their Economic Activities**

Block	Cultivation		Agriculture Labour		Business		Service		Other		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
Bisamcuttack	73	91.25	0	0.00	0	0.00	2	2.50	5	6.25	80	100.0
Chandrapur	73	93.59	0	0.00	1	1.28	0	0.00	4	5.13	78	100.0
Kalyansinghpur	78	97.50	0	0.00	0	0.00	0	0.00	2	2.50	80	100.0
Kashipur	78	97.50	1	1.25	0	0.00	0	0.00	1	1.25	80	100.0
Muniguda	73	91.25	1	1.25	0	0.00	1	1.25	5	6.25	80	100.0
Total	375	94.22	2	0.50	1	0.25	3	0.75	17	4.27	398	100.0

Source: Field Survey

Note: Activities total are not additive, as activities are not mutually exclusive.

As found, across the five Blocks in Rayagada District out of the total sample 398 HHs participated in the interaction and data collection process. It was revealed that 375 HHs (94.2 per cent) are doing agriculture (cultivation), which is found to be the primary and major activity in comparison to the other income generation activities. As a major income generation activity of cultivation is followed by the other/ ancillary activities i.e. 17 HHs (4.27 per cent), 3 HHs (0.75 per cent) are engaged in service sector, 1 HH (0.25 per cent) in Business and another 2 HHs (0.5 per cent) in Agricultural Labour activity. It was also found that engagement of the Respondent HHs in cultivation is almost same in all the selected five Blocks i.e. in Bisamcuttack Block it is 73 HHs (91.25 per cent), 73 HHs (93.59 per cent) in Chandrapur Block, 78 HHs (97.50 per cent) in Kalyansinghpur Block, it is 78 HHs (97.5 per cent) in Kashipur Block and again it is 73 HHs (91.3 per cent) in Muniguda Block.

As observed across the five Blocks, the respondent HHs are engaged in various economic activities that determine their individual income and wealth and it also contributes the HHs to be considered as either rich or poor. Moreover, it is very often found that in a household all the members of the house are engaged in agricultural activities, which is the primary source of their income and that also provides them food throughout the year. The survey also found that in addition to that they are engaged in some other minor income generation activities throughout the year. It was observed that the respondents HHs are selling a portion of their agricultural produce to manage the other essential expenses of the family like clothing, health needs and educational expenses throughout the year.

## 2.5 House Structure of the Respondent HHs

House structure of a respondent household is very often considered as an important indicator of the social and economic status of a family in the rural area. Under the Baseline Survey 2017-18, in Phase – II data were collected and compiled across the selected five Blocks. It is observed that across the blocks in Rayagada District out of the total 398 HHs surveyed (Table

2.6 & Fig. 2.6)

surveyed 200

HHs (50.25 per

cent) are found to

be having *Semi-*

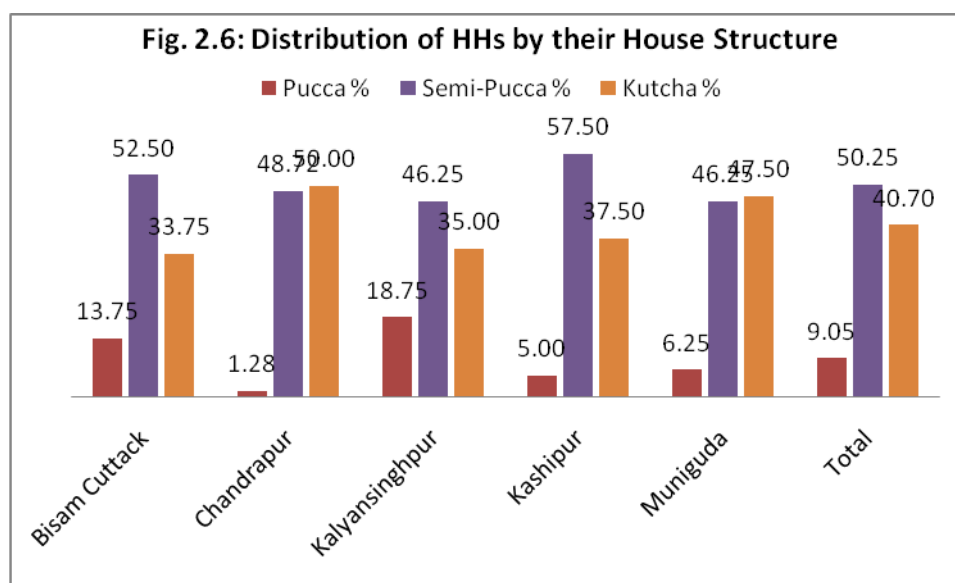
*Pucca* houses. In

this regard, the

second highest

number is 162

(40.70 per cent)



as *Kutcha* houses and the remaining 36 HHs (9.05 per cent) are *Pucca* Houses.

**Table 2.6: Distribution of Households by across the Blocks by their House Structure**

Block	Pucca		Semi-Pucca		Kutcha		Total	
	No	%	No	%	No	%	No	%
Bisamcuttack	11	13.75	42	52.50	27	33.75	80	100.0
Chandrapur	1	1.28	38	48.72	39	50.00	78	100.0
Kalyansinghpur	15	18.75	37	46.25	28	35.00	80	100.0
Kashipur	4	5.00	46	57.50	30	37.50	80	100.0
Muniguda	5	6.25	37	46.25	38	47.50	80	100.0
Total	36	9.05	200	50.25	162	40.70	398	100.0

Source: Field Survey

As shared, across the five Blocks the Chandrapur Block has the highest number i.e. 39 HHs (50 per cent) are having the *Kutcha* houses, whereas Muniguda Block has the second highest number of *Kutcha* Houses i.e. 38 (47.50 per cent). Moreover, in Chandrapur Block only 1 HH (1.28 per cent) house is found to be *Pucca*. As far as the number of *Pucca* houses among the respondent HHs in the other Blocks are concerned it is 11 HHs (13.8 per cent) in

Bisamcuttack, 15 HHs (18.8 per cent) in Kalyansinghpur, 4 HHs (5 per cent) in Kashipur and another 5 HHs (6.05 per cent) in Muniguda.

## **2.6 Conclusion**

From the various social and economic data mentioned in the Table No. 2.1 to 2.6 and are also being shared through the Figures 2.1 to 2.6, the findings as well as corresponding analysis indicates that 396 HHs (99.50per cent) of the total respondent farming households across the five Blocks belong to the BPL Category. Across the five blocks in the District, it was also found that more than 91.3 per cent of the respondent households are primarily also engaged in cultivation activities. Moreover, out of the total 398 households surveyed during the said Baseline Survey total 36 HHs (9.05 per cent) are having the *Pucca* houses, the highest 200 HHs (50.25 per cent) are having the *Semi-Pucca* houses and the remaining 162 HHs (41.70 per cent) the second highest and are having the *Kutcha* Houses.

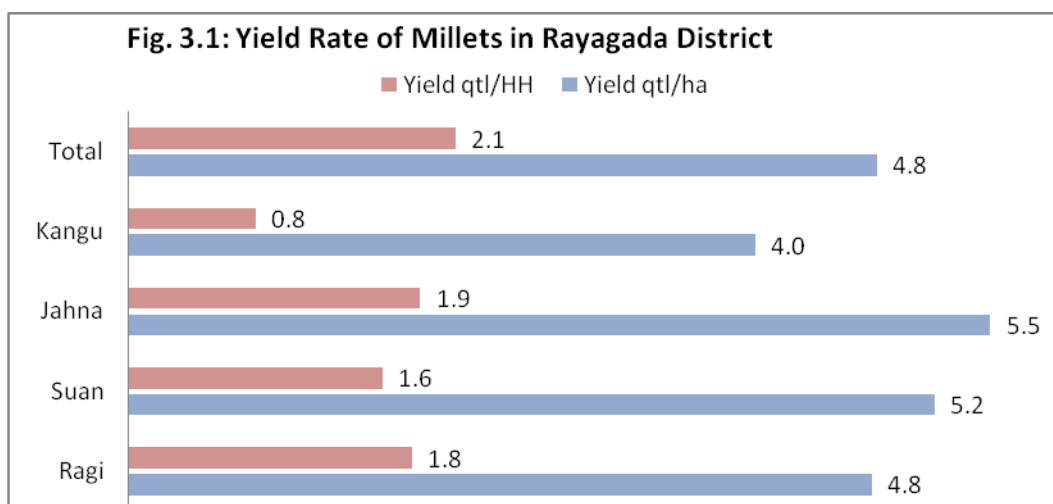
## 3 PRODUCTION

### 3.1 Introduction

Along with assessment of social and economic status of the millets and other farmers in Rayagada District across the five Blocks consisting of Bisamcuttack, Chandrapur, Kalyansinghpur, Kashipur and Muniguda Blocks the Baseline Survey 2017-18 has made a sincere attempt to capture the ground reality on the exact production process, package of millets agricultural practices as well as its productivity.. Under the production practices of millets the seed selection, the exact sources of the seeds, the quality of the seeds, process of preserving the seeds, process of sowing seeds during cultivation and productivity has been captured and analyzed as follows.

### 3.2 Area, Production and Yield

As found in the Baseline Survey, across the five Blocks there are four types of millets produced by the Farmers such as *Ragi*, *Suan*, *Janha* and *Kangu* which is cultivated mainly during the *Kharif* Season. It was found that out of the 398 respondent HHs, only 347 HHs cultivated millets in the last *Kharif* Session. The total quantity of all four types of millets are produced across the five Blocks by the 347 millets farming HHs is 725.61 quintals from 151.64 hectors of land (Table 3.1). In the District across the five Blocks it was also observed that the average yield per hector of *Ragi* is 4.8 quintals per hector; average yield of *Suan* is 5.2 quintals



per hector, average yield of *Janha* is 5.5 quintals per hector and the average yield of *Kangu* is 4.0 quintals per



hector (Table 3.1 & Fig.3.1). It was also found that across the five Blocks in Rayagada District the yield per HH of *Ragi* is 1.8 quintals, the yield of *Janha* per HH that was found to be the highest i.e. 1.9 quintals, the yield of *Suan* per HH is 1.6 quintals, and the yield of *Kangu* per HH is 0.8 quintals, which is found to be the low among the four varieties of millets produced in Rayagada District (Fig. 3.1 & Table 3.1).

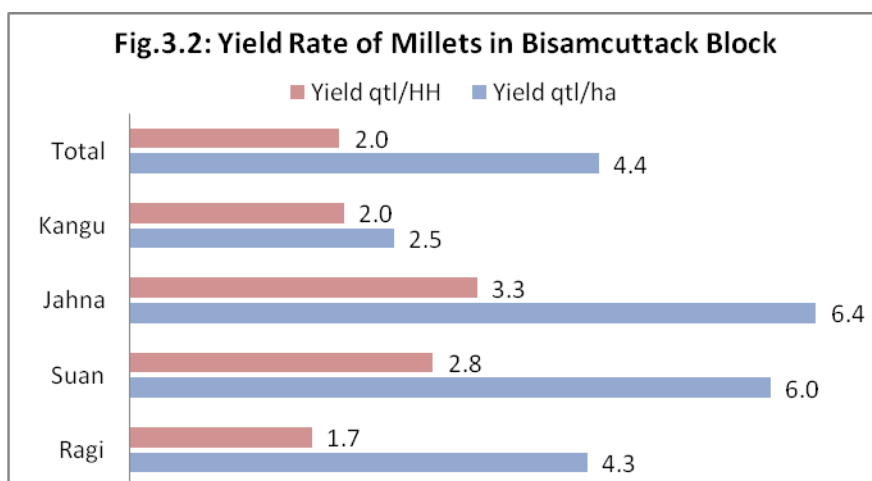
**Table 3.1: Area, Production and Yield of Millets in Rayagada District**

Millets	HHs		Area		Production		Yield	
	No	%	Ha	%	qtl	%	qtl/ha	qtl/HH
Ragi	341	98.27	130.17	85.86	618.41	85.23	4.8	1.8
Suan	39	11.24	12.28	8.10	63.25	8.72	5.2	1.6
Janha	14	4.03	4.74	3.12	26.10	3.60	5.5	1.9
Kangu	22	6.34	4.45	2.94	17.85	2.46	4.0	0.8
Total	347	100.00	151.64	100.02	725.61	100.00	4.8	2.1

Source: Field Survey

Note: The area and production figures are rounded up to the first decimal, and hence, may not add up to all values across crops. As the HHs has multiple crops, it may not add up to the total in the table.

Across the five blocks in Rayagada District, especially in Bisamcuttack Block the production of *Ragi* is found to be highest i.e. 110.50 quintals from 25.79 hectares of cultivation. It is followed by *Suan* i.e. 8.50



quintals from 1.42 hector of land (Table 3.2 and Fig.3.2). Moreover, in the Block it was also found that only one farmer is cultivating both *Kangu* and *Ragi* and another farmer is cultivating *Ragi*, *Suan* and *Janha*. Two families are cultivating *Ragi* and *Suan* and another two families are cultivating *Ragi*, *Suan* and *Janha*.

As far as the yield rate of millets at the household level in Bisamcuttack Block is concerned, for *Janha* it is 3.3 quintal per HH which is found to be the highest among the all four

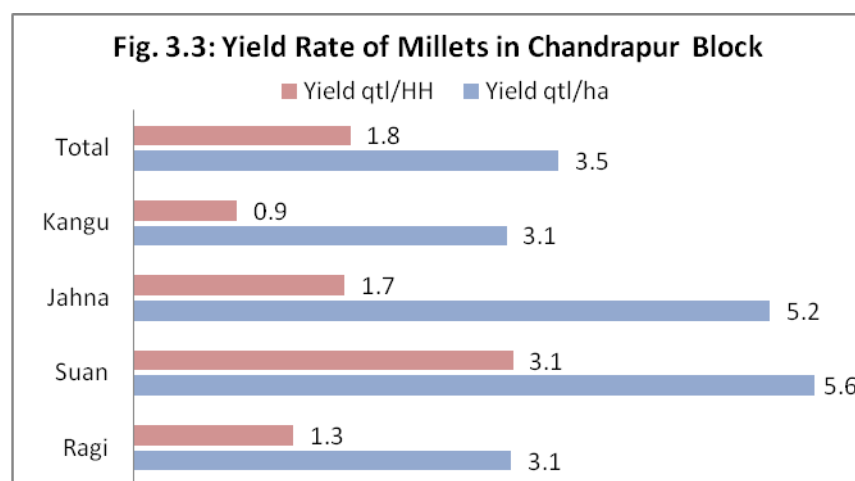
variants of millets produced in the locality. It is followed by *Suan* i.e. 2.8 quintals per HH, for *Kangu* it is 2.0 quintal per HH and for *Ragi* it is 1.7 quintal per HH that is found to the lowest yield among the four varieties. In the Block, the average yields of all four varieties are found to be 2.0 quintals per HH.

**Table 3.2: Area, Production and Yield of Millets in Bisamcuttack Block**

Millets	HHs		Area		Production		Yield	
	No	%	Ha	%	qtl	%	qtl/ha	qtl/HH
Ragi	65	100.00	25.79	88.8	110.50	86.7	4.3	1.7
Suan	3	4.62	1.42	4.9	8.50	6.7	6.0	2.8
Janha	2	3.08	1.01	3.5	6.50	5.1	6.4	3.3
Kangu	1	1.54	0.81	2.8	2.00	1.6	2.5	2.0
Total	65	100.00	29.03	100.0	127.50	100.0	4.4	2.0

Source: Field Survey

Note: The area and production figures are rounded up to the first decimal, and hence, may not add up to all values across crops. As the HHs has multiple crops, it may not add up to the total in the table.



As it is found in the Baseline Survey, in Chandrapur Block (Table 3.3 and Fig. 3.3) out of the total HHs surveyed, 63 HHs (94.0 per cent) have cultivated *Ragi* in 26.7 hectors of land, producing 82.8 quintals. In case of

*Ragi*, it is also found that the yield rate at the HH level is 1.3 quintals and per hector it is 3.1 quintals. In the Block, it was also found that four framers are cultivating both *Ragi and Kangu* and another four HHs both *Ragi and Suan*. Among the respondent HHs, total nine HHs are cultivating *Ragi and Janha*.

In Chandrapur Block out of the total respondent HHs only 4 HHs are cultivating *Suan* covering 2.2 hectors with a production of 12.5 quintals. Here, the yield per hector of *Suan* is 5.6 quintals per hector and 3.1 quintals per HH. 11 HHs are cultivating *Janha* in 3.6 hectors with a

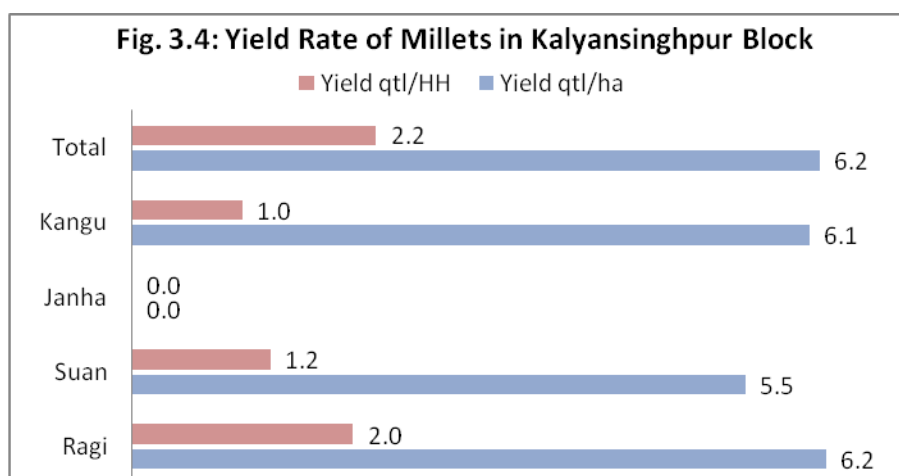
production of 19.1 quintals; yield in quintal per hector is 5.2 and per HH is 1.7 quintals. In the same way *Kangu* is cultivated by 6 HHs, covering 1.7 hectors produced 5.1 quintals; the yield rate per hector is 3.1 quintal and per HH is 0.9 quintals.

**Table 3.3: Area, Production and Yield of Millets in Chandrapur block**

Millets	HHs		Area		Production		Yield	
	No	%	Ha	%	qtl	%	qtl/ha	qtl/HH
Ragi	63	94.0	26.7	77.9	82.8	69.3	3.1	1.3
Suan	4	6.0	2.2	6.5	12.5	10.5	5.6	3.1
Janha	11	16.4	3.6	10.7	19.1	16.0	5.2	1.7
Kangu	6	9.0	1.7	4.9	5.1	4.3	3.1	0.9
Total	67	100.0	34.2	100.0	119.5	100.0	3.5	1.8

Source: Field Survey

Note: The area and production figures are rounded up to the first decimal, and hence, may not add up to all values across crops. As the HHs has multiple crops, it may not add up to the total in the table.



It was also observed that in Kalyansinghpur Block, during the last *Kharif* Season out of the total 78 respondent HHs, 77 HHs have cultivated *Ragi*, 9 HHs *Suan*, 7 HHs have cultivated

*Kangu* and not a single HH cultivated *Janha* (Table 3.4). Cultivation of *Ragi*, *Suan* and *Kangu* by the respondent HHs are found to be mutually exclusive. In the Block, it is also found that the 77 farmer families are cultivating *Ragi* in 24.5 hectors of land with a production of 152.7 quintals, at the rate of 6.2 quintals per hector and 2 quintal per HH.

In the Kalyansinghpur Block, in addition to the above it was found among the respondent HHs that out of the total HHs, 6 HHs are cultivating *Ragi* and *Kangu*, another nine HHs are cultivating *Ragi* and *Suan*. Among the respondent HHs, only one HH is cultivating *Ragi*, *Suan* and *Kangu*.

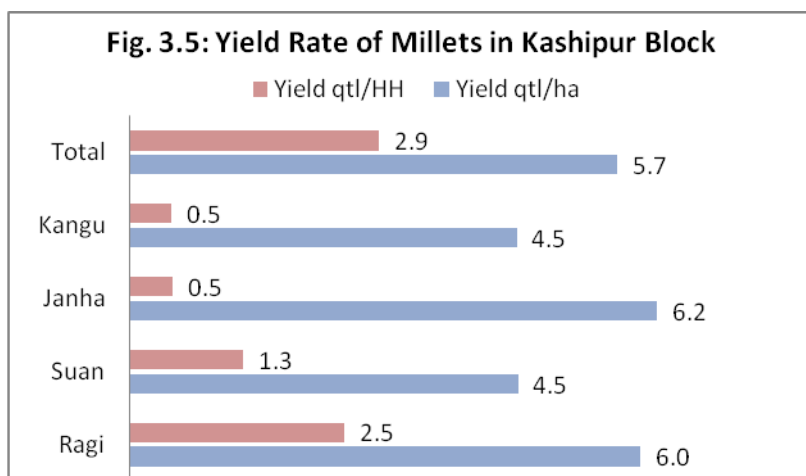
**Table 3.4: Area, Production and Yield of Millets in Kalyansinghpur block**

Millets	HHs		Area		Production		Yield	
	No	%	Ha	%	qtl	%	qtl/ha	qtl/HH
Ragi	77	98.7	24.5	88.5	152.7	89.4	6.2	2.0
Suan	9	11.5	2.0	7.4	11.2	6.6	5.5	1.2
Janha	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kangu	7	9.0	1.1	4.1	6.9	4.0	6.1	1.0
Total	78	100.0	27.6	100.0	170.8	100.0	6.2	2.2

Source: Field Survey

Note: The area and production figures are rounded up to the first decimal, and hence, may not add up to all values across crops. As the HHs has multiple crops, it may not add up to the total in the table.

In the same way, in Kashipur Block, the yield per hector of Suan is 4.5 quintals, *Ragi* is 6 quintals, *Janha* is the highest i.e. 6.2 quintals and *Kangu* is 4.5 quintals. Whereas, the yield *Kangu* is 0.5 quintals per HH, the yield of *Janha* per HH is 0.5 quintals per HH, for *Suan* it is 1.3 quintals per HH and *Ragi* it is 2.5 quintals per HH (Fig. 3.5 & Table 3.5).

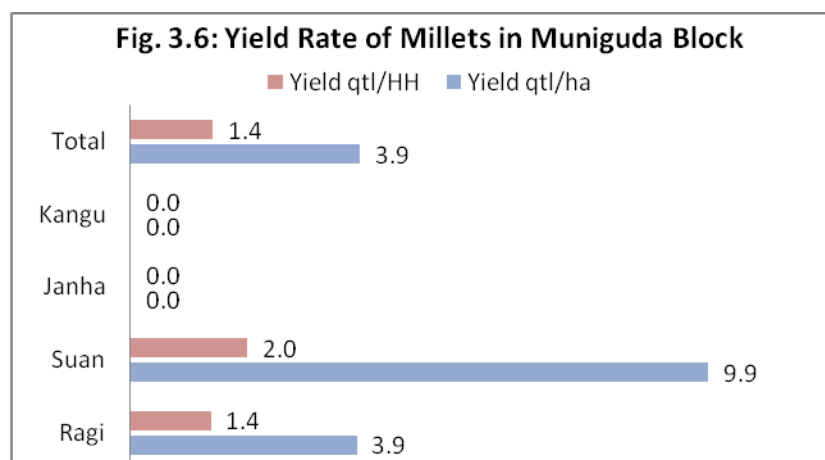
**Table 3.5: Area, Production and Yield of Millets in Kashipur block**

Millets	HHs		Area		Production		Yield	
	No	%	ha	%	Qtl	%	qtl/ha	qtl/HH
Ragi	75	98.7	31.6	81.1	188.4	84.9	6.0	2.5
Suan	22	28.9	6.4	16.5	29.1	13.1	4.5	1.3
Janha	1	1.3	0.1	0.2	0.5	0.2	6.2	0.5
Kangu	8	10.5	0.9	2.2	3.9	1.7	4.5	0.5
Total	76	100.0	38.9	100.0	221.8	100.0	5.7	2.9

Source: Field Survey

Note: The area and production figures are rounded up to the first decimal, and hence, may not add up to all values across crops. As the HHs has multiple crops, it may not add up to the total in the table.

In the Block out of the total respondent HHs, 76 HHs have cultivated millets during the last *Kharif* Session. Total 75 HHs have cultivated *Ragi* in 31.6 hectors of land with a production of 188.4 quintals, with the yield rate of 6 quintals per hector and 2.5 quintals per HH. In the same way 22 HHs have cultivated *Suan* in 6.4 hectors of land, with a production of 29.1 quintals, yield rate of 4.5 quintals per hector and 1.3 quintals per HH. Total 8 HHs have cultivated *Kangu* in 0.9 hectors of land, with a production of 3.9 quintals, yield rate of 4.5 quintals per hector and 2.9 quintals per HH. Moreover only one HH has cultivated *Janha* in 0.1 hector of land with a production of 3.9 quintals, yield rate of 4.5 quintals per hector and 0.5 quintals per HH. In the Block, it was also found that out of the total respondent families 22 HHs are cultivating both *Ragi and Suan*, two HHs are cultivating *Ragi, Kangu and Suan*, and five HHs are cultivating *Ragi and Kangu*. Only one HH is cultivating *Ragi*, as well as *Janha*.



Likewise, in Muniguda the Baseline Survey Data reveals that in the Block not a single HH has cultivated *Janha and Kangu*, whereas as many as 61 HHs are found to be cultivating *Ragi* in an area of 21.7 hectors, with a production of 84.1 quintals,

yield rate of 3.9 quintals per hector and 1.4 quintals per HH (Fig. 3.6 & Table 3.6).

**Table 3.6: Area, Production and Yield of Millets in Muniguda block**

Millets	HHs		Area		Production		Yield	
	No	%	ha	%	qtl	%	qtl/ha	qtl/HH
Ragi	61	100.0	21.7	99.1	84.1	98.0	3.9	1.4
Suan	1	1.6	0.2	0.9	2.0	2.0	9.9	2.0
Janha	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kangu	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	61	100.0	21.9	100.0	86.1	100.0	3.9	1.4

Source: Field Survey

Note: The area and production figures are rounded up to the first decimal, and hence, may not add up to all values across crops. As the HHs has multiple crops, it may not add up to the total in the table.

Likewise, in the Block only one HH has cultivated *Suan* in 0.2 hectors, with a production of 9.9 quintals per hector and 2 quintals per HH. In the Block, it was also found that only one HHs is cultivating *Ragi and Suan*.

### 3.3 Perception of Farmers on the Quality of Seeds Used

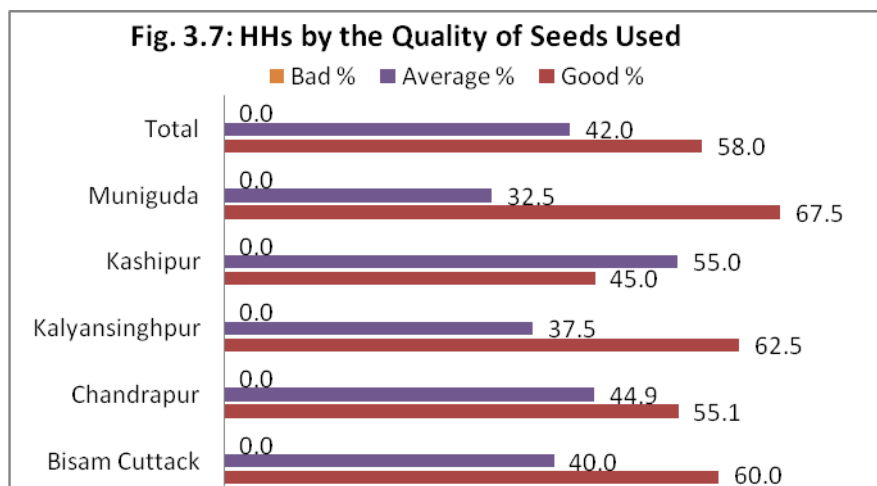
According to the respondent millet farming households in Rayagada District, the quality of seed is an important component of whole the cultivation and crop production process. According to them most of the time, the quality of the seeds used determines the volume of production and the same high quality seeds are again properly preserved for the next crop to reap the benefits.

**Table 3.7: Perception of Respondents on the quality of seeds used**

Block	Good		Average		Bad		Total	
	No.	%	No.	%	No.	%	No.	%
Bisamcuttack	48	60	32	40	0	0	80	100
Chandrapur	43	55.13	35	44.872	0	0	78	100
Kalyansinghpur	50	62.5	30	37.5	0	0	80	100
Kashipur	36	45	44	55	0	0	80	100
Muniguda	54	67.5	26	32.5	0	0	80	100
Total	231	58.04	167	41.96	0	0	398	100

Source: Field Survey

As per the findings of the Baseline Survey, as there was hardly any provision of seeds either from the Agriculture Department, Govt. of Odisha or from the local NGOs, most of the millet farming HHs across the five Blocks in Rayagada District is found to be using the locally available, tested over the years and traditionally preserved seeds. In the district, across the blocks total 398 millets farming HH's responses were analyzed. Out of the total 80 HHs in Bisamcuttack Block, 48 HHs (60 per



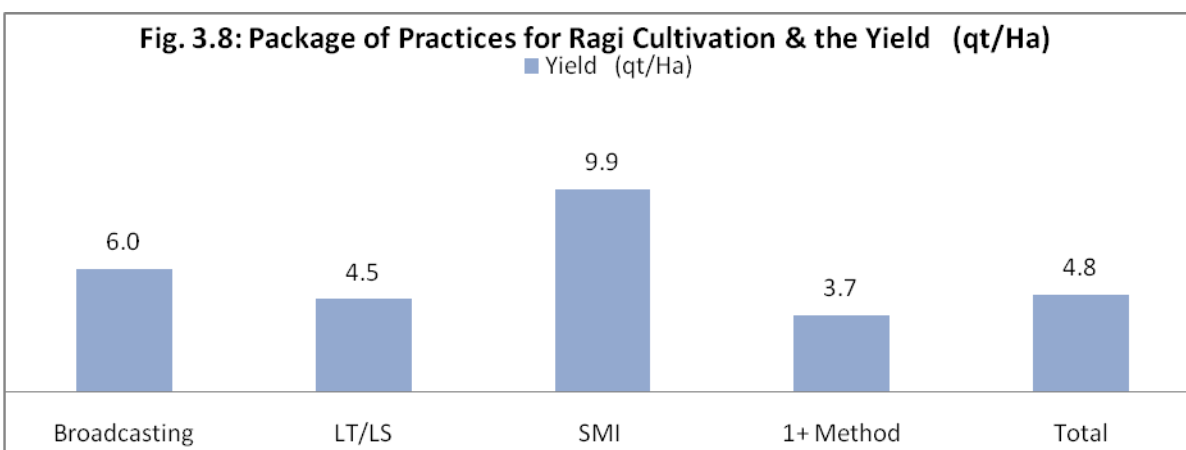
cent) shared that the quality of the seeds being used by them during the last *Kharif* Season was of good quality, another 32 HHs (40 per cent) told that the quality was average and not a single HH shared that the seeds being used by them was found to be bad (Table 3.7 & Fig.3.7).

Likewise, according to the Survey in Chandrapur Block out of the total 78 respondents HHs, 43 HHs (55.13 per cent) reveals that the seed being used by them during the last *Kharif* Season was of good quality. Another 32 HHs (40 per cent) told that the seeds being used by them are average and nobody said that it was of bad quality. After further enquiry it was revealed that their seed is not bad because, by using the same locally available seed they have been producing and consuming millets since years and as there is hardly any option to go for better seeds they were quite happy with it.

In the same way, in Kalyansinghpur Block out of the total, 50 HHs (62.5 per cent) farmer respondent households revealed that the seed being used by them was good; again 30 households (37.5 per cent) told that it was of average quality. In Kashipur Block, out of the total 36 respondent HHs (45 per cent) told that the seed quality being used by them are good, 44 HHs (55 per cent) told that the seed being used by them was average, and nobody said that the seed quality was of bad quality. In Muniguda Block, out of the total 54 respondent HHs (67.5 per cent) told that the seed quality being used by them are good, 26 HHs (32.5 per cent) told that the seed being used by them was average, and nobody said that the seed quality was of bad quality. Some of were of the opinion that if possible, Government should provide them good quality seeds for higher production.

### **3.4 Package of Practices**

As the package of practices is also vital for a millets farmer, in this section the different agronomic practices being followed by the respondent HHs have been discussed at length. Under the agronomic and package of practices, the information on if the farming HHs are doing Broadcasting, Line Sowing (LS), Line Transplanting (LT) or the latest i.e. the System of Rice Intensification (SMI) were collected. As revealed, in Rayagada District across the five Blocks, out of the total 398 respondent HHs millets are being cultivated by 347 HHs. They have adopted Broadcasting, Line Transplantation (LT)/ Line Sowing (LS) and SMI methods.



Adopting the different package of practices per hector, the yield rate of *Ragi* across the five blocks in Rayagada has been calculated (Fig. 3.8 & Table 3.8). In this case, when the broadcasting method was adopted by the 75 respondent HHs in 23.7 hectors their production was 141.9 quintals and their yield per hector was found to be 6 quintals. When the Line Transplantation (LT)/ Line Sowing (LS) was adopted by 262 HHs covering an area of 99.1 hectors with a production of 446.6 quintals, it was 4.5 quintals per hector. Moreover, when the SMI method was adopted by only one farmer in 0.4 hectors with a production of 4 quintals, the yield rate per hector is the highest i.e. 9.9 quintals per hector. In this case, the 1+ Method was adopted by three farmers in 7 hectors with a production of 26 quintals; its yield was 3.7 quintals per hector.

**Table 3.8: Package of Practices of *Ragi* Cultivation in Rayagada District**

Package of practice	HHs		Area		Production		Yield (qt/Ha)
	No	%	ha	%	qtl	%	
Broadcasting	75	22.0	23.7	18.2	141.9	22.9	6.0
LT/LS	262	76.8	99.1	76.1	446.6	72.2	4.5
SMI	1	0.3	0.4	0.3	4.0	0.6	9.9
1+ Method	3	0.9	7.0	5.4	26.0	4.2	3.7
Total	341	100.0	130.2	100.0	618.4	100.0	4.8

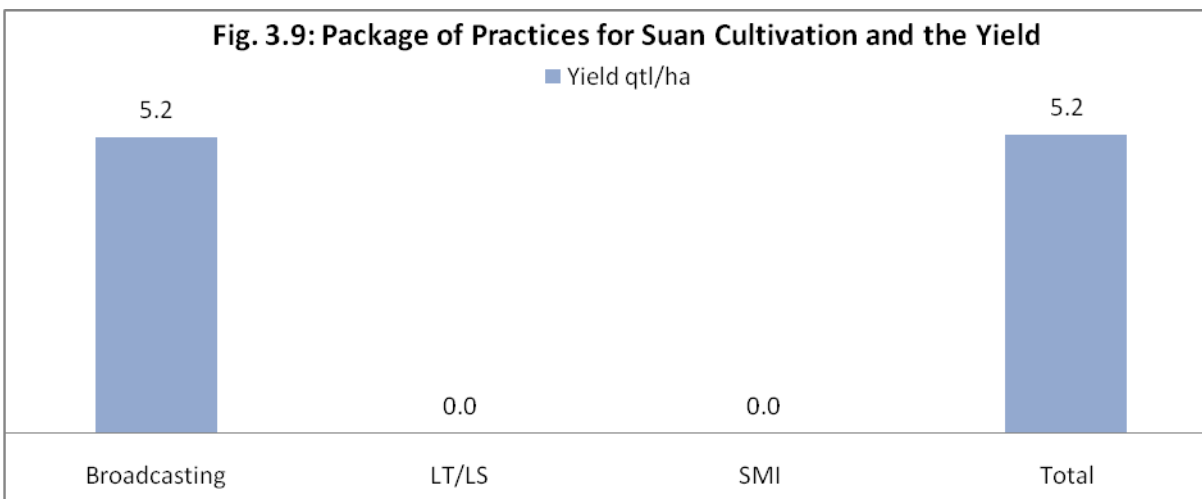
Source: Field Survey

Note: The area and production figures are rounded up to the first decimal, and hence, may not add up to the total values across package of practices.

In case of *Suan* cultivation, across the five blocks it was found that 39 farmers (Table 3.9 & Table 3.9) had adopted broadcasting method, cultivated in 12.3 hectors of land, got 63.3 quintals of *Suan* and the yield rate is 5.2 quintals per hector. In the same way, not a



single HH has cultivated *Suan* by adopting LT/ LS or SMI.



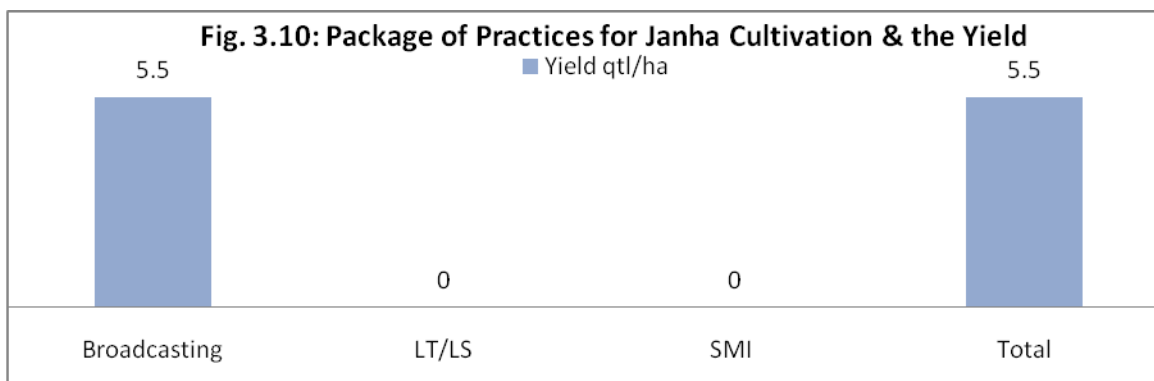
**Table 3.9: Package of Practices of *Suan* Cultivation across Blocks**

Package of practice	HHs		Area		Production		Yield
	No	%	ha	%	qtl	%	qtl/ha
Broadcasting	39	100.0	12.3	100.0	63.3	100.0	5.2
LT/LS	0	0.0	0.0	0.0	0.0	0.0	0.0
SMI	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	39	100.0	12.3	100.0	63.3	100.0	5.2

Source: Field Survey

Note: The area and production figures are rounded up to the first decimal, and hence, may not add up to the total values across package of practices.

In case of *Janha* cultivation (Table 3.10 & Fig.3.10) it is observed that not a single



HH has adopted the LT/ LS or the SMI, whereas 14 HHs have adopted Broadcasting method and cultivated Janha in 4.7 hectares with a production of 26.1 quintals and here the yield rate is 5.5 quintals per hectare.

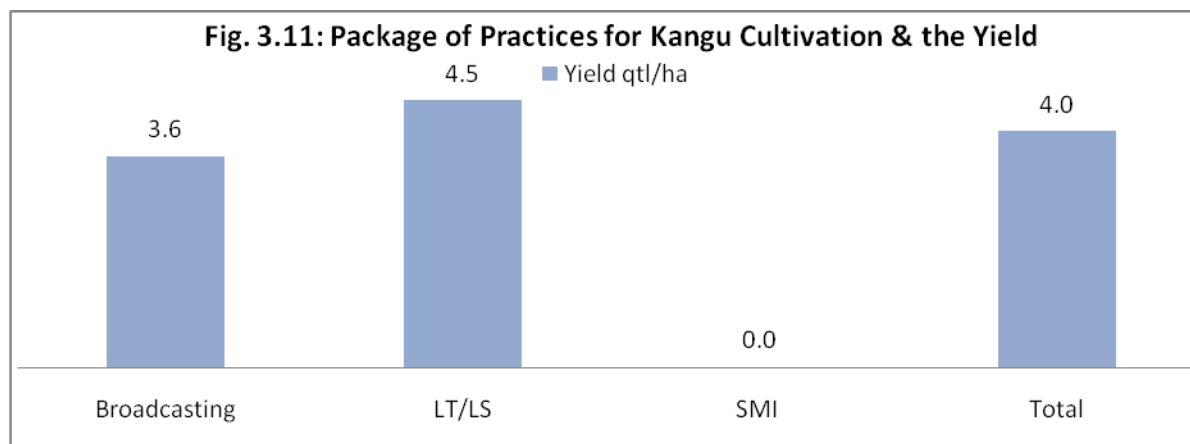
**Table 3.10: Package of Practices of *Janha* Cultivation across Blocks**

Package of practice	HHs		Area		Production		Yield
	No	%	ha	%	qtl	%	qtl/ha
Broadcasting	14	100.0	4.7	100.0	26.1	100.0	5.5
LT/LS	0	0	0	0	0	0	0
SMI	0	0	0	0	0	0	0
Total	14	100.0	4.7	100.0	26.1	100.0	5.5

Source: Field Survey

Note: The area and production figures are rounded up to the first decimal, and hence, may not add up to the total values across package of practices.

As per the Baseline Survey, the yield rate of *Kangu* cultivation by following the different package of practices is concerned, in the District across the five Blocks it was observed that 13 HHs adopted Broadcasting method in 2.5 hecters with a production of 8.9 quintals and the yield rate is 3.6 quintals per hecter (Table 3.11 & Fig. 3.11).



Here, only 9 HHs have adopted the LT/ LS Method in 2 hecter with a production of 9 quintals and the yield rate is 4.5 quintals per hecter. Here, not a single HH has adopted SMI Method in their *Kangu* Cultivation. Across the five Blocks in the District, it was observed that total 22 respondents HHs are cultivating *Kangu* in an area of 4.5 hecter with a total production of 17.9 quintals and the yield rate is 4 quintals per hecter. In this case, not a single HH has adopted the 1+ Method to cultivate *Kangu* either.

**Table 3.11: Package of Practices of *Kangu* Cultivation across Blocks**

Package of practice	HHs		Area		Production		Yield
	No	%	ha	%	qtl	%	qtl/ha
Broadcasting	13	59.1	2.5	55.5	8.9	49.6	3.6
LT/LS	9	40.9	2.0	44.5	9.0	50.4	4.5
SMI	0	0.0	0	0.0	0	0.0	0.0
Total	22	100.0	4.5	100.0	17.9	100.0	4.0

Source: Field Survey

Note: The area and production figures are rounded up to the first decimal, and hence, may not add up to the total values across package of practices.

### 3.5 Conclusion

During the Baseline Survey 2017-18, in Rayagada District, across the five Blocks it was found that *Ragi*, *Suan*, *Janha* and *Kangu* are cultivated. *Ragi* is cultivated by 341 HHs in 130.2 hectares of land, *Suan* is cultivated by 39 HHs in 12.3 hectares of land, *Janha* is cultivated by 14 HHs covering 4.7 hectares of land and *Kangu* is cultivated by 22 HHs covering total 4.5 hectares. In case of *Ragi*, the yield rate is 4.8 quintals/ hectore, whereas for *Suan* it is 5.2 quintals per hectore, *Janha* yield is 5.5 quintals per hectore and for *Kangu* it is 4 quintals per hectore. It was also revealed that overall, 58per cent of the HHs used good quality of seeds, 42 per cent of the total HHs used the average quality seeds and nobody used bad quality seeds across the five Blocks in the District.

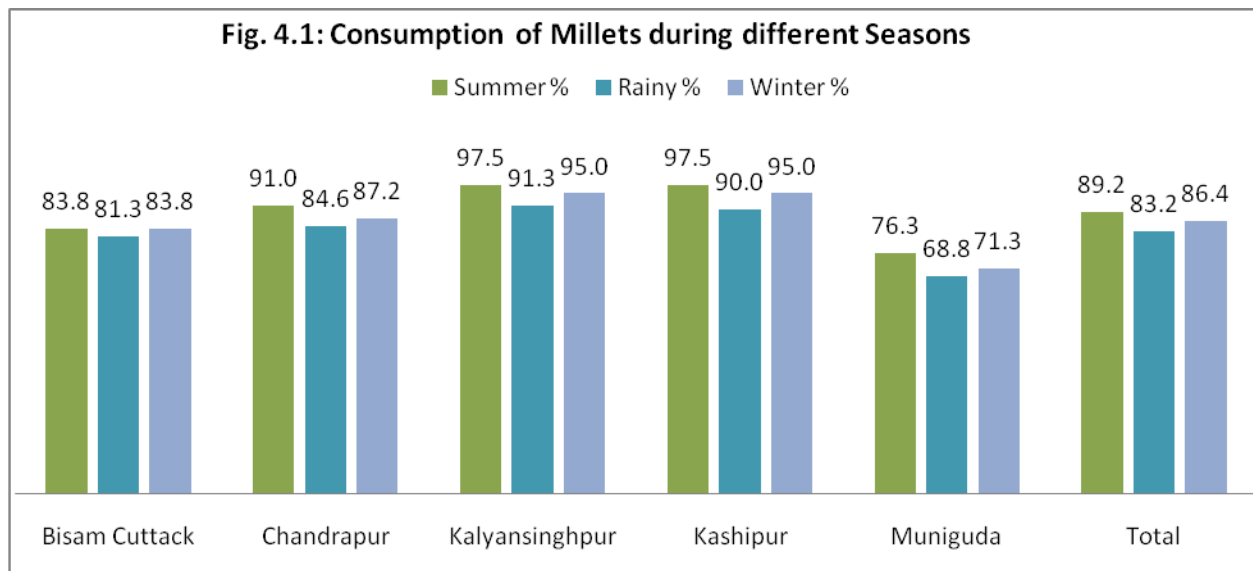
In the next chapter, analysis of the findings on the consumption pattern of the respondent households is discussed.

## 4 CONSUMPTION

### 4.1 Introduction

Millet production, consumption and marketing are inter related and depends on one another. Demand for production of millets largely depend on the consumption of various millets based recipes by all age groups throughout the day. In the earlier chapters, production practices by the millets farming respondent HHs have been discussed. Based on the findings of the Baseline Study conducted in Rayagada District across the five Blocks consisting of Muniguda, Chandrapur, Kalyansinghpur, Kashipur and Bisamcuttack this Chapter analyses the consumption pattern of millets in different seasons, at different times in a day. Moreover, nutritional and other health benefits from the millet based recipes determine its consumption at large.

### 4.2 Consumption of Millets across the five Blocks in Different Seasons



To capture the consumption pattern of the millets farming respondent HHs across the above mentioned five Blocks in Rayagada Districts are asked and Focussed Group Discussions (FGDs) were also held at the village level. Across the Blocks, as shared by the people of the respondent HHs at the village level (Table 4.1 and Fig. 4.1), they consume more and more millets based recipes that is not mutually exclusive rather independent. As revealed it is more

during the Summer (89.20 per cent) in comparison to the Rainy (83.17 per cent) or during the Winter Season (86.43 per cent).

**Table 4.1: Consumption of Millets in different Seasons**

Block	No. of HHs	Summer		Rainy		Winter		Total no. of HHs Consumed	
		No.	%	No.	%	No.	%	No.	%
Bisamcuttack	80	67	83.75	65	81.25	67	83.75	67	83.75
Chandrapur	78	71	91.03	66	84.62	68	87.18	71	91.03
Kalyansinghpur	80	78	97.5	73	91.25	76	95	78	97.5
Kashipur	80	78	97.5	72	90	76	95	78	97.5
Muniguda	80	61	76.25	55	68.75	57	71.25	61	76.25
Total	398	355	89.20	331	83.17	344	86.43	355	89.20

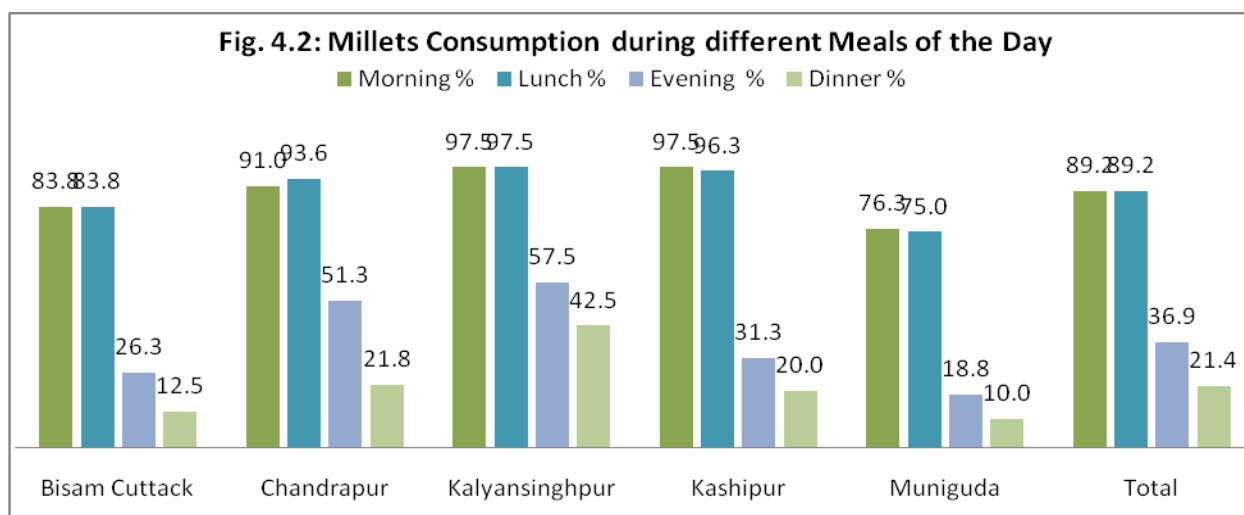
Source: Field Survey

Note: Row totals are not additions across seasons, as a household can consume millets in all seasons.

As observed in the Baseline Survey, in Bisamcuttack out of the total 80 HHs, 67 HHs (83.75 per cent) shared that they take millets during summer, 65 HHs (81.25 per cent) in Rainy and another 67 HHs told that they take millets during the Winter Session. Likewise, in Chandrapur Block it was observed that around 91 per cent HHs take millets in summer, 84 percent HHs takes in Rainy and another 83 per cent HHs takes during the winter session. In Kalyansinghpur, it was found that it was 97 per cent, 91 per cent and 95 percent respectively. Likewise in Kashipur it is 97 per cent, 90 per cent and 95 percent and in Muniguda it is found to be 76 per cent, 68 per cent and 71 per cent respectively.

### 4.3 Consumption of Millets during Different Meals in a Day

It was also revealed that across the five Blocks in the District throughout the day they do physical labour under the Sun, hence, to relieve from being hydrated and get rid of even the Sun Strokes they prefer to take the millet based recipes. As found in the Baseline Survey, the food intake pattern of the respondent HHs in Rayagada District across the Blocks reflect that millets based recipes are found to be the most essential part of their daily life and the recipes intake is not mutually exclusive rather independent.



As the Table 4.2 and Fig. 4.2 reflect, almost all HHs (89.2 per cent) take millet based recipes during the morning, followed by Lunch (89.2 per cent), Dinner (21.4 per cent) and the Evening time (36.9 per cent). Except Muniguda Block (18.8 per cent), in Bissamcuttack (26.3 per cent) and Kashipur (31.3 per cent) more than fifty per cent of the respondent HHs in the remaining Blocks are taking millets based recipes even during the evening.

**Table 4.2: Millets Consumption during Different Meals in a Day**

Block	No. of HHs	Morning		Lunch		Evening		Dinner		Total no. of HHs Consumed	
		No.	%	No.	%	No.	%	No.	%	No.	%
Bisamcuttack	80	67	83.8	67	83.8	21	26.3	10	12.5	67	83.8
Chandrapur	78	71	91.0	73	93.6	40	51.3	17	21.8	71	91.0
Kalyansinghpur	80	78	97.5	78	97.5	46	57.5	34	42.5	78	97.5
Kashipur	80	78	97.5	77	96.3	25	31.3	16	20.0	78	97.5
Muniguda	80	61	76.3	60	75.0	15	18.8	8	10.0	61	76.3
Total	398	355	89.2	355	89.2	147	36.9	85	21.4	355	89.2

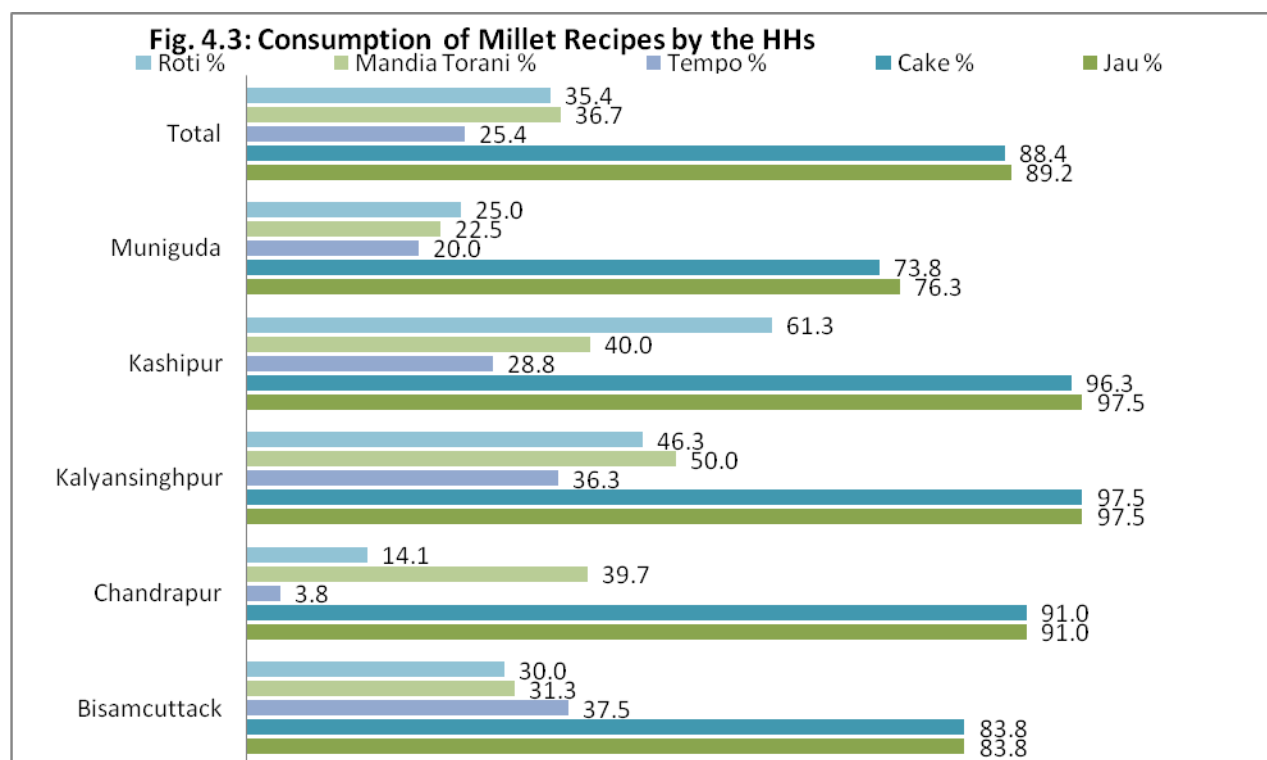
Source: Field Survey

Note: Column totals are not additions across meals, as a household can consume millets during all meals of the day.

#### 4.4 Millet Recipes Consumed by the Respondent HHs

Consumption of millet based recipes is found to be a most ancient and traditional practice of the indigenous and tribal communities in the whole of undivided Rayagada District including Rayagada and the other tribal concentrated areas in Odisha. Thus, millet cultivation still exists in this belt and even forms a major food intake. As found in the Baseline Survey (Table 4.3 and

Fig.4.3), the local communities are consuming millets in a number of ways such as it is in the form of *Jau* (89.2 per cent), Cake (88.4 per cent), Tampo (25.4 per cent), *Mandia Torani* (36.7 per cent) and *Roti* (35.4 per cent) across the five Blocks.



It was also observed that in all the five blocks most of the respondent households (89.2 per cent) are taking *Mandia Jau* (Finger Millet porridge) prepared from millets mostly during the morning. It is followed by cake/ flat bread (88.4 per cent). As shared cakes are generally being prepared mostly during the festival, ceremonies and functions.

**Table 4.3: Consumption of Millets Recipes**

Block	No. of HHs	Jau		Cake		Tempo		Mandia Torani		Roti		Total No. of HHs Consumed	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Bisamcuttack	80	67	83.8	67	83.8	30	37.5	25	31.3	24	30.0	67	83.8
Chandrapur	78	71	91.0	71	91.0	3	3.8	31	39.7	11	14.1	71	91.0
Kalyansinghpur	80	78	97.5	78	97.5	29	36.3	40	50.0	37	46.3	78	97.5
Kashipur	80	78	97.5	77	96.3	23	28.8	32	40.0	49	61.3	78	97.5
Muniguda	80	61	76.3	59	73.8	16	20.0	18	22.5	20	25.0	61	76.3
Total	398	355	89.2	352	88.4	101	25.4	146	36.7	141	35.4	355	89.2

Source: Field Survey

Note: Row totals are not additions across recipes, as a household can prepare all recipes.

As observed in the Baseline Survey, out of the total respondent HHs in Bisamcuttack Block 30 HHs (37.5 per cent), in Chandrapur Block only 3 HHs (3.8 per cent), Kashipur Block 23 HHs (28.8 per cent), Muniguda Block 16 HHs (20 per cent) and in Kalyansinghpur Block 29 HHs (36.3 per cent) are taking *Tempo*. As revealed, *Tempo* is being prepared by adding sugar/ jaggery as a semi liquid recipe. People from all age groups, especially the children like this particular recipe. Likewise in Bisamcuttack Block 25 HHs (31.3 per cent), in Chandrapur 31 HHs (39.7 per cent), in Kashipur 32 HHs (40 percent), Kalyansinghpur Block 40 HHs (50 percent) and in Muniguda Block only 18 HHs (22.5 per cent) is taking the most popular *Mandia Torani*. *Mandia Torani* is a locally prepared beverage, which is prepared from *Mandia* with due addition of herbs.

The Baseline Survey also found that in Bisamcuttack Block 24 HHs (30 per cent), in Chandrapur Blok 11 HHs (14 per cent), in Kashipur 49 HHs (61 percent), Kalyansinghpur Block 37 HHs (46.3 percent) and in Muniguda Block only 20 HHs (25 per cent) is taking *Mandia Roti* as a recipe.

#### **4.5 Conclusion**

The millets farming HHs consume more and more millets based recipes during the Summer Season (89.20 per cent), especially during breakfast to keep them fit and strong to work hard and save them from Sun in comparision to the Rainy (83.17 per cent) or during the Winter Season (86.43 per cent). In addition to that it is also found that the local communities are consuming millets in a number of different ways that includes in the form of *Jau* (89.2 per cent), Cake (88.4 per cent), *Tempo* (25.4 per cent), *Mandia Torani* (36.7 per cent) and *Roti* (35.4 per cent) across the five Blocks in Rayagada District.

The next chapter discusses the various activities and issues linked to the processing and marketing of millets.



## 5 PROCESSING AND MARKETING

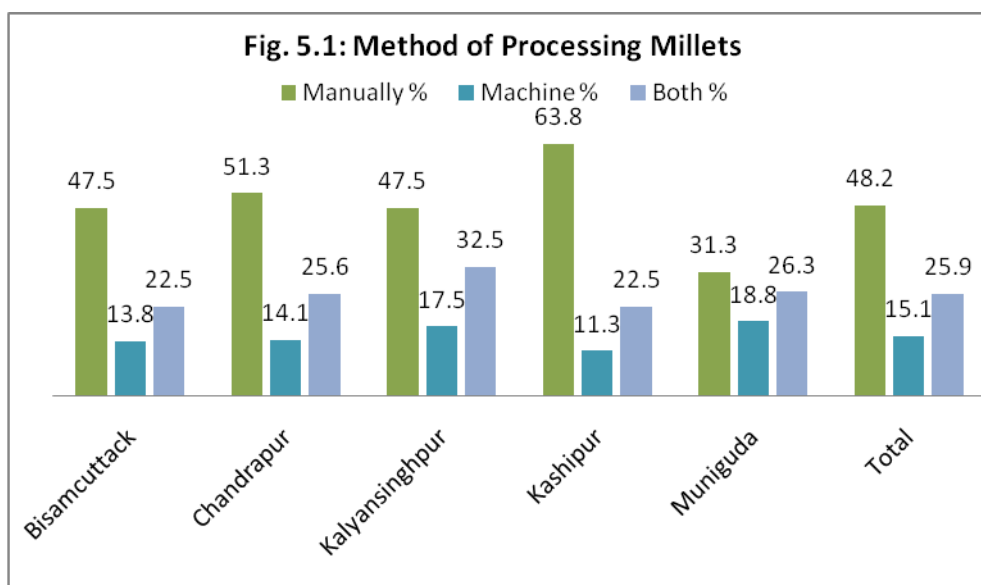
### 5.1 Introduction

Marketing millets as well as all millets varieties based products largely depends on the extent of millets produced in the locality and other accessible places in the State. Based on the findings and analysis of the Baseline Survey held in Rayagada District consisting of the Bisamcuttack Block, Chandrapur Block, Kalyansinghpur Block, Kashipur Block and Muniguda Block this chapter discusses the various methods being adopted by the respondent millet farming and non-farming but consuming HHs in processing, availability and the distance covered by the households to reach the processing and milling units. It also discussed the various modes of marketing as well as the exact trend in utilization of millets by the sample respondent HHs.

### 5.2 Processing of Millets

After cultivation and harvesting, processing of millets is an essential as well as an important activity for the farmer to make the produce ready for use or even get it ready for selling in due price.

As shared to the investigator during the Baseline Survey,



while selling the millets based produces the farmer always try to ensure that there is more and more profit. As observed in Rayagada District across the five Blocks usually two types of processing takes place at the village level by the households, one is by manually by using the locally available *Chaki* or crusher and the other is through machines.

In Rayagada District, across the five Blocks (Table 5.1 & Fig. 5.1) out of the total 398 respondent HHs, 355 HHs shared their mode of processing. As found, across the five Blocks 192 HHs (48.2 per cent) are doing it manually by the locally available *Chaki*/ Stone Crusher, 60 HHs (15.1 per cent) by using machines, another 103 HHs (25.9 per cent) revealed that they are adopting both the methods as and when required according to their convenience. To be specific, in Bisamcuttack Block out of the 67 HHs only 38 HHs (47.5 per cent) are found to be milling or crushing it manually, 11 HHs (13.8 per cent) using machines, and another 18 HHs (22.5 per cent) revealed that they are adopting both the methods as and when required according to their convenience.

**Table 5.1: Method of Processing Millets**

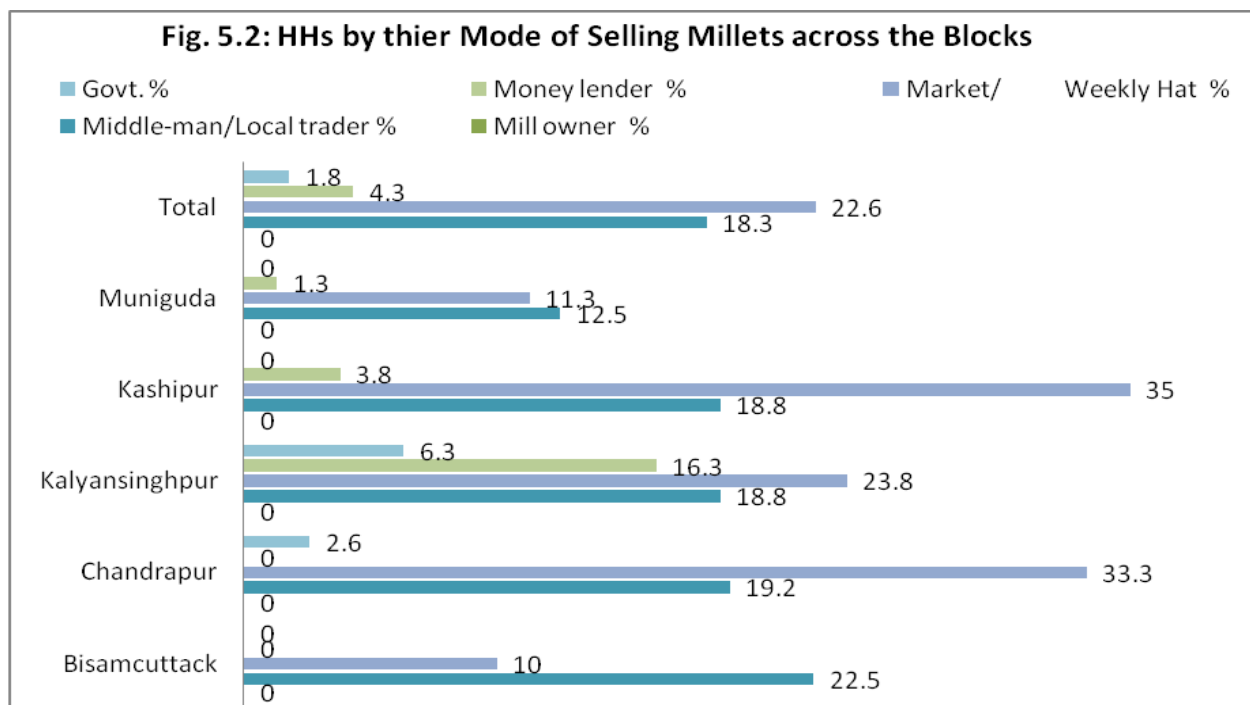
Block	No. of HHs	Manually		Machine		Both		Total No. of HHs Processed	
		No.	%	No.	%	No.	%	No.	%
Bisamcuttack	80	38	47.5	11	13.8	18	22.5	67	83.8
Chandrapur	78	40	51.3	11	14.1	20	25.6	71	91.0
Kalyansinghpur	80	38	47.5	14	17.5	26	32.5	78	97.5
Kashipur	80	51	63.8	9	11.3	18	22.5	78	97.5
Muniguda	80	25	31.3	15	18.8	21	26.3	61	76.3
Total	398	192	48.2	60	15.1	103	25.9	355	89.2

Source: Field Survey

In Chandrapur Block as many as 40 HHs (51.3 per cent) are doing it manually, 11 HHs (14.1 per cent) by using the available machines, and another 20 HHs (25.6 per cent) revealed that they are adopting both the methods as and when required according to their convenience. In Kalyansinghpur Block as many as 38 HHs (47.5 per cent) are doing it manually, 14 HHs (17.5 per cent) by using the available machines, and another 26 HHs (32.5 per cent) revealed that they are adopting both the methods as and when required according to their convenience. In Kashipur Block as many as 51 HHs (63.8 per cent) are doing it manually, 9 HHs (11.3 per cent) by using the available machines, and another 18 HHs (22.5 per cent) revealed that they are adopting both the methods as and when required according to their convenience. In Kashipur Block as many as 25 HHs (31.3 per cent) are doing it manually, 15 HHs (18.8 per cent) by using the available machines, and another 21 HHs (26.3 per cent) revealed that they are adopting both the methods as and when required according to their convenience.

### 5.3 Marketing of Millets

Adequate millets cultivation, its proper production and timely processing help the farming households in smooth consumption of their produce throughout the year. In addition to that it so happens that if the production is good or when the millets farmer produces more than their own consumption they usually go for marketing. In such a case, the producer has to take a right decision on where and who to sell so that it would be giving them the required profit that may lead to more and more income and savings.



In some cases, it so happens that with a constant increase in their annual income from all sources including millets farming they may cross the poverty line set by the Government. Hence, marketing millets is important for the respondent farmer households. As shared by the millet farming respondents HHs (Table 5.2 and Fig. 5.2) in Rayagada District across the five Blocks it was revealed that hardly anybody has sold their millet produce to the mill owner. However, among the total 187 HHs those who have sold their millet produces there are 73 HHs (18.3 per cent) sold to either the Local Trader or the Middle Man, 90 HHs (22.6 per cent) sold in the local Weekly Market (*Hat*), 17 HHs (4.3 per cent) to the Money Lender and only 7 HHs (1.8 per cent) to the Govt. at the local Mandi.

To be specific, in case of the Bisamcuttack Block 18 HHs (22.5 per cent) sold to either the Local Trader or the Middle Man, 8 HHs (10 per cent) sold in the local Weekly Hat, nobody sold to the Money Lender and to the Govt. through the local Mandi. In case of Chandrapur Block 15 HHs (19.2 per cent) sold to either the Local Trader or the Middle Man, 26 HHs (33.3 per cent) sold in the local Weekly Hat, 13 HHs (16.3 per cent) sold either to the Money Lender and 2 HHs (2.6 per cent) sold at the local Mandi. And in Kalyansinghpur Block out of the total 15 HHs (18.8 per cent) sold to either the Local Trader or the Middle Man, 19 HHs (23.8 per cent) sold in the local Weekly Hat, 13 HH (16.3 per cent) to the Money Lender and only five HHs (6.3 per cent) sold at the local Mandi.

In Kashipur Block out of the total 15 HHs (18.8 per cent) sold to either the Local Trader or the Middle Man, 28 HHs (35 per cent) sold in the local Weekly Hat, 3 HHs (3.8 per cent) to the Money Lender and nobody sold at the local Mandi. In Muniguda Block out of the total 10 HHs (12.5 per cent) sold to either the Local Trader or the Middle Man, 9 HHs (11.3 per cent) sold in the local Weekly Hat, 1 HH (1.3 per cent) to the Money Lender and nobody sold at the local Mandi.

**Table 5.2: HHs across blocks by their Mode of Selling Millets**

Block	No. of HHs	Mill owner		Middle-man/Local trader		Market/Weekly Hat		Money lender		Govt.		Total no. of HHs Sold	
		No	%	No	%	No	%	No	%	No	%	No	%
Bisamcuttack	80	0	0	18	22.5	8	10	0	0	0	0	26	32.5
Chandrapur	78	0	0	15	19.2	26	33.3	0	0	2	2.6	43	55.1
Kalyansinghpur	80	0	0	15	18.8	19	23.8	13	16.3	5	6.3	52	65
Kashipur	80	0	0	15	18.8	28	35	3	3.8	0	0	46	57.5
Muniguda	80	0	0	10	12.5	9	11.3	1	1.3	0	0	20	25
Total	398	0	0	73	18.3	90	22.6	17	4.3	7	1.8	187	47

Source: Field Survey

Note: The row totals are not additions across mode of selling millets, as a household can sell in multiple ways

## 5.4 Conclusion

During the Baseline Survey it was found that in Rayagada District, across the five Blocks, not a single respondent HH sold their millet produce to the mill owner, 73 HHs (18.3 per cent) sold to either the Local Trader or the Middle Man, 90 HHs (22.6 per cent) sold in the local

Weekly Hat, 17 HHs (4.3 per cent) to the Money Lender and only 7HHs (1.8 per cent) to the Govt. at the local Mandi. Across the five Blocks it was also revealed that not a single HHs has sold their millet produces to the mill owner. Moreover, it was also found that in Bisamcuttack Blok as many as 18 HHs (22.5 per cent) respondents that is highest across the five Blocks in the District were found to be selling their products to the Middle Man or the Local Trader. Whereas, in Kashipur Block 28 HHs (35 per cent) that is highest among the Blocks in Rayagada District are found to be selling their millet based produces at their local market/ Weekly Market (*Hat*).

## 6

### MAJOR FINDINGS

- 6.1 As revealed in the Baseline Survey, in Rayagada District, across the five surveyed Blocks it was found that in Kalyansinghpur Block total 78 HHs that is the highest number among the respondent HHs out of the 80 surveyed HHs are engaged in millets cultivation.
- 6.2 Across the five Blocks in Rayagada District, as many as 78 HHs in Kashipur Block are also the highest numbers of Scheduled Tribe population (97.5 per cent) among all the respondent households are found to be cultivating millets. In the district across the five Blocks average 94 per cent of the ST HHs is producing millets.
- 6.2 It was found in the Baseline Survey that across the five Blocks among the respondent HHs, 341 HHs are doing the traditional methods of sowing i.e. broadcasting while cultivating Ragi. It was also found that across the five blocks, while cultivating *Ragi* 75 HHs (22 per cent) are adopting broadcasting, the highest 262 HHs (76.8 per cent) are also doing the Line sowing & Line transplantation and only one HH is following the System of Millets Intensification (SMI) and another 3 HHs have adopted the 1+ Method.
- 6.4 In the District, across the five Blocks the Baseline Survey found that the millets farming HHs are using their own and even the locally available seeds that are being preserved by them from their own produce by adopting traditional method. It was also revealed that 58.04 per cent respondents HHs shared that their own seed is of good quality and another 41.96 per cent told that it is of average quality.
- 6.5 The Baseline Survey conducted across the five Blocks in the District reveals that out of the total 398 HHs Surveyed, 341 respondent households are cultivating *Ragi* covering 130.2 hectares with a production of 618.4 quintals and another 39 HHs are cultivating *Suan* in 12.3 hectares of land with a production of 63.3 quintals.
- 6.6 In Rayagada District across the five Blocks, it was also revealed that per hectare production (yield) of *Ragi* is 4.8 quintals, which is found to be lower than *Suan* i.e. 5.2 quintals per hectare.
- 6.7 It was also observed that most of the respondents HHs across the five Blocks in the District are taking millets based recipes throughout the day on a regular basis. In comparison to lunch (89.2 per cent), dinner (21.4 per cent) or evening time (36.9 per cent), at the morning all most all (89.2 per cent) are taking millets based recipes.
- 6.8 Across the five Blocks, it was also found that as many as 89.2 per cent respondent HHs are taking *Millets* based recipes during the Summer Season, which is bit less (83.17 per cent) in Rainy Season and 86.43 per cent even during the Winter Season. As shared, while working under sun the millets based recipes keeps them cool and healthy.

- 6.9 It is found in most of the villages across the five Blocks in Rayagada District that as many as 48.2 per cent of the millets farming HHs have been milling it manually and it is happening throughout the year; 15.1 per cent of the respondents HHs are milling it by machine in their leisure and mostly during the local market days and another 25.9 per cent of the HHs are doing it by adopting both the methods as per their convenience.
- 6.10 In the Baseline Survey it was revealed that each year most of the millets farming respondent HHs (22.6 per cent) sell at the Weekly Hat, it is followed by another 18.3 per cent HHs sell to the Local Trader/ Middle man, 4.3 per cent HHs sell to the Money lender as an obligation, and only 1.8 per cent sell at the Govt. Mandi.
- 6.11 It was also found that millet farming HHs are interested to sell their produce at the Govt. declared Minimum Support Price (Rs.31.50), which is yet to function in a fully fledged manner in their locality.



Confidential for Research Purpose Only

**HOUSEHOLD SCHEDULE**  
**ON**  
**SPECIAL PROGRAMME FOR PROMOTION OF MILLETS IN TRIBAL**  
**AREAS OF ODISHA**

*Annexure – I*

Nabakrushna Choudhury Centre for Development Studies, Odisha, Bhubaneswar-751013

**1. Identification of the HHs**

- a. Name of the (i) Village \_\_\_\_\_  
(ii) Gram Panchayat: \_\_\_\_\_  
(iii) Block: \_\_\_\_\_  
(iv) District: \_\_\_\_\_
- b. Category i) SC ii) ST iii) OBC iv) SEBC v) Others (Specify)
- c. Sub-caste/ Sub-tribe: \_\_\_\_\_
- d. Religion i) Hindu ii) Muslim iii) Christian iv) Animism v) Others
- e. Category of HH: BPL/APL
- f. House structure: Pucca/Kutcha/Semi-Pucca

**2. Are you indebted?** Yes/ No. If yes, what is the amount: Rs. \_\_\_\_\_

**3. Land Details (last year, Acre)** i) Owned \_\_\_\_\_, ii) leased in \_\_\_\_\_  
iii) Leased out \_\_\_\_\_ iv) Encroached \_\_\_\_\_  
v) FRA \_\_\_\_\_ v) Other \_\_\_\_\_  
vi) Cultivable Land \_\_\_\_\_

**4. Total irrigated land owned (last year, Acre):** \_\_\_\_\_

**5. Cropping systems** i) Mono ii) Mixed [specify the crop(s)] \_\_\_\_\_  
iii) Inter cropping [specify the crop(s)] \_\_\_\_\_

**6. Seed (last year)** i) Quantity of seed used (in kg): \_\_\_\_\_  
ii) Is it the quantity adequate? (Yes/No)  
iii) Seed Treatment (Yes/No)  
iv) Seed quality: Good/Average/Bad



**7. Package of practices for millets (Last year, put tick mark)**

- i)Germination test: Yes/No
- ii)Weeding: Weeder/Manual/ Both
- iii)Number of weeding: 1/2/3/4
- iv)Application of Fertiliser: Organic/Chemical/ Both
- v)Application of Pesticides: Organic/Chemical/ Both

**8. Production and Utilization of Millets (2017-18)**

Type of Millet	Total Production (qtl.)	Family consumption (qtl.)	Kept for Seed (qtl.)	Marketed (qtl.)	Selling Price (Rs/qtl.)
Mandia					
Suan					
Kangu					
Gurji					
Any other (Specify)					

**9. Season-wiseAverage Requirment/Consumption (in Kg.)**

Season	Summer	Winter	Rainy
Requirment			
Consumption			

10. Time of consumption: Breakfast/Lunch/Evening snacks/Dinner
11. Whether Purchased: Yes/No
12. Whether received from friends/relatives: Yes/No
13. Processing millets: Manually/ Machine/ Both
14. If by machine, is it your own machine: Yes/No
15. Food items prepared: i) Jau ii) Tampo iii) Pitha iv) Mandis Torani v) Handia v) Others
16. Saleof millets/Distance:a)Mill \_\_\_\_\_ b)Middle-man/Local trader \_\_\_\_\_
- d) Market \_\_\_\_\_ e)Money lender \_\_\_\_\_
- f)Any Other (Specify)\_\_\_\_\_

## 17: Household Particulars

Sl. No.	Name start with the Respondent of the HH	Relationship with HH (Use Code)	Marital Status	Sex M-1 F-2	Age	Education (Use Code)	Occupation&Income (Use Code)			Millet Based Activities (Use Code)
							Main	Subsidiary	Annual income (approx.)	

**Note: Relationship:** 1-Self, 2-Spouse, 3-Son, 4-Daughter, 5- Daughter-in-law, 6-Son-in-law, 7-Father, 8-Mother, 9-brother, 10-Sister, 11-Grand-son, 12- Grand-daughter, 13-Father-in-law, 14-Mother-in-law, 15-(Specify)

**Marital Status:** 1- Married, 2- Unmarried, 3- Widow, 4- Widower, 5- Divorced, 6-Separated, 7-(Specify)

**Education:** 1-Illiterate, 2-Just literate, 3-Upto Class 5, 4-Class 6-10, 5-Higher Secondary, 6- Graduate, 7- Post Graduate, 8- Technical(Diploma), 9- Technical(Degree), 10- Professional/Management, 11-Other (Specify)

**Occupation:** 1- Agriculture, 2- Daily labour/ Wage labour, 3- Business/ Entrepreneurship, 4- Government Servant, 5- Private service, 6-Migrants,7- Artisans, 8-Service Provider,9- MFP collection, 10-Student, 11-Housewife, 12-Other (Specify)

**Millet Based Activities:** 1=Production, 2=Consumption, 3= Processing, 4= Marketing

**18: Crop-wise and Method-wise Details of Production (Last Year i.e. June 2017-May 2018):**  
(Area in Acre, Production in Quintal)

Sl.No	Name of the Crop	SMI		Line Transplanting		Line Sowing (LS)		Broadcasting		Any other (Specify)	
<b>Kharif</b>		A	P	A	P	A	P	A	P	A	P
1	Mandia										
2	Suan										
3	Kangu										
4	Koda										
5	Gurji										
6	Jawar										
7	Bajra										
8	Any other										
9	Any other										
<b>Rabi</b>	Mandia										

Note: A stands for Area and P stands for Production(Use additional sheets for Rabi)

**19: Expenditure pattern**

**20: Sources of Income**

Sl.No	Sources	Annual Expenditure (In Rs)	Sl. No	Sources	Annual Income (In Rs.)
1	Food		1	Agriculture	
2	Clothes		2	Millets	
3	Education		3	Horticulture	
4	Medicine		4	Forest	
5	Social Function		5	Ag. Labour	
6	Marriage & Ceremony		6	Salary	
7	Agriculture		7	Pension	

8	Construction		8	Remittance	
	Durable Assets		9	Livestock	
10	Others		10	Others (Specify)	
11	Total		11	Total	

**Remarks:**

**Signature of the investigator**

**Focused Group Discussion**

**Date:**

**Name of the Village:**

**Name of the Block:**

**Name of the District:**

**Stratification: Ethnicity/ Caste/ Gender**

**Sex:**

**Number of Individuals:**

**Number of Children:**

**Verbal consent obtained: yes/no**

<b>Participant's name</b>	<b>Age</b>	<b>Sex</b>	<b>Education</b>	<b>Job</b>	<b>Notes</b>
<b>1.</b>					
<b>2.</b>					
<b>3.</b>					
<b>4.</b>					
<b>5.</b>					

6.					
7.					
8.					
9.					
10.					
11.					
12.					

*[For the benefit of the enumerator: the focused group discussion aims to capture the millet related activities prior to OMM intervention in the community. Thus, focus of the discussion may attempt to capture the existing production activities, whether millet as a crop is being produced, processed, consumed and marketed in the locality.]*

### **Discussion points**

- How many HH are there in the village/hamlet? Economic status, Social and religious composition, education, health status et al.
- Please give a brief description of the basic amenities available in the village. (For example, water sources, drinking water facilities, electricity, AWC, primary school, health care facilities, market place, transport facilities etc.)
- What are the primary livelihood activities practised in the village?
- What are major activities around the farm that you undertake? (sowing, reaping, processing, weeding, storage practices). Who generally does what?
- Give a brief description on types of land, irrigation facilities, major crops produced, preservation of seeds/procurement of seeds, agriculture related government programmes, processing of produced crops, marketing of agricultural goods etc.
- Is millet production a part of agriculture practice in the village? How many HH cultivate millets in the village? Please elaborate on the cultivation process.

- What are the common food consumption practices in the village? (also probe: include episodically consumed food/status food, festivities and feasts, death and mourning, food offering to God)
- Is millet consumed in the locality? Source, how frequently, in what form, reason for consumption)
- Are you aware of the nutri benefits of millets? Elaborate.

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<sup>i</sup> In The New Indian Express, February 13, 2020, the article titled “Odisha Second Bigger State in BPL Rank” reflects on the State Wise Poverty rate, the Reserve Bank of India corroborated it by saying that 13.85 million (32.50 per cent) population of Odisha are BPL as of 2011-12. Odisha ranks second among the bigger states which have maximum number of population below the National Poverty Line (National Average in 21.92 per cent). Persons with Annual Family Income not exceeding Rs.40000/- in rural areas and Rs.60000/- in urban areas are eligible for BPL Card/ AAY Card who can get the Annual Income Certificate issued by the concerned Tahsildar.