BASELINE SURVEY

NABARANGPUR DISTRICT 2018-19, Phase – III

(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 S*wabhimananchal* 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^{2}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 Mr. R. Balakrishnan, IAS, former Development Commissioner-cum-Additional Chief Secretary (DC-cum-ACS) & former Chairman, Nabakrushna Choudhury Center for Development Studies (NCDS); Mr. Asit Kumar Tripathy, IAS, DC-cum-ACS, Govt. of Odisha & Chairman, NCDS; Mr. Suresh Chandra Mohapatra, IAS, DC cum ACS; Mr. P. K. Mohapatra, IAS, Agriculture Production, Commissioner; Mr. Manoj Ahuja, IAS, former Principal Secretary, Dept. of Agriculture and Farmer's Empowerment (DAFE), Dr. Saurabh Garg, IAS, Principal Secretary, DAFE; Mr. Bhaskar Jyoti Sarma, IAS, DAFE; Mr. Hari Ballav Mishra, IAS, former Director, Directorate of Agriculture and Food Production (DAFP), Dr. M. Muthukumar, IAS, Director, DAFP; Dr. Ajit Kumar Mishra, OAs (SAG) Collector and District Magistrate, Nabarangpur; Mr. Kashinath Khuntia, Joint Director, Agriculture (JDA), Millets & Integrated Framing, DAFP; Dr. Ananda Chandra Sasmal, Agronomist, DAFE; Mr. Ansuman Pattnayak, Assistant Agriculture Officer (AAO), Farm, Millets, DAFP and Mr. Sajay Kumar Pani, DAFP.

We express our sincere thanks and gratitude to various District level Officers of Nabarangpur District, particularly to Dr. Ajit Kumar Mishra, OAS (SAG), Collector & District Magistrate, Nabarangpur; Shri Nimai Charan Sutar, OAS (S), ADM, Nabarangpur; Mr. Manoj Kumar Behera, Dy. Director Agriculture, Nabarangpur; Mr. Sushil Haldar, District Agriculture Officer, Nabarangpur; Mr. Prasanta Sahoo, District Agriculture Officer, Umerkote; Mr. Prasad Kumar Naik, District Agriculture Officer, Papadahandi, and the respective Agriculture Officers of Jharigaon and Kosagumuda Blocks.

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. Niranjan

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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 Nabarangpur, Papadahandi, Umerkote, Jharigaon and Kosagumuda Blocks in Nabarangpur District i.e. the Dynamical Operation for Social Transformation (DOST), the Regional Centre for Development Cooperation (RCDC), GOVINDALAYA and Harsa Trust. Our sincere thanks goes to their Community Resource Persons (CRPs), Field Coordinators and Chief Functionaries for coordinating the data collection from the households as well as for coordinating the Focused Group Discussions (FGDs) at the village level.

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 2019. Nabarangpur comes within the newly enlisted Districts. In the Phase - III, five Blocks of the District were covered to expand the programme. Hence, the Baseline Survey 2018-2019 was conducted in Nabarangpur, Papadahandi, Umerkote, Jharigaon and Kosagumuda Blocks. The present Baseline Survey Report is based on the findings of the said Study.

1.2 Across the five Blocks, total 1817 Households (HHs) are proposed to be covered under the programme; out of the total across the five Blocks in Nabarangpur District 400 HHs were surveyed. From that 240 HHs are cultivating millets and the remaining 160 were found to be not cultivating millets. By adopting random sampling method 80 HHs each from Nabarangpur, Papadahandi, Umerkote, Jharigaon and Kosagumuda Blocks are surveyed under the Baseline Survey. To be specific, as observed out of the total surveyed HHs 47 HHs in Jharigaon Block, 35 HHs in Kosagumuda Block, 62 HHs in Nabarangpur Block, 43 HHs in Papadahandi Block and another 53 HHs in Umerkote Block surveyed are found to be cultivating millets.

2 Socio-economic Profile of the Respondent HHs

2.1 As observed by the Baseline Survey 2018-19, across the five Blocks in the District from the total 400 surveyed HHs, 75.3 per cent belong to Scheduled Tribe (ST), 3.3 per cent belong to Scheduled Caste (SC) and another 21.5 per cent belonged to the Other Caste (OC) Category.

2.2 Among the respondent HHs, across the five Blocks in Nabarangpur District it is observed that 47.7 percent belong to Female and 52.3 percent belong to the Male category.

2.3 As surveyed, among the total respondent HHs, across the five Blocks in Nabarangpur District it is also observed that all 400 HHs (100 per cent) belong to Hindu Religion.

2.4 Across the five Blocks in Nabarangpur District, in the Baseline Survey 2018-19 found that 94.5 per cent HHs are engaged in cultivation activities, 0.5 per cent are engaged as Agricultural Laborer, not a single HH is found to be engaged in Business or collection of the Minor Forest Produces (MFPs). It was also found that across the five Blocks 0.5 per cent HH are engaged in Service and 4.3 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 400 HHs, 20 (7.3 per cent) houses are *Pucca,* 30 HHs (14 per cent) houses are Semi *Pucca* and the highest number i.e. 315 HHs (78.8 per cent) houses are found

to be having *Kutcha* houses as their dwelling units. Moreover, out of the total 400 HHs surveyed all 400 HHs belonged to the Below Poverty Line Category (BPL).

3 Production

3.1 In Nabarangpur District, across the five blocks it was found that out of the total 400 respondent HHs, 240 HHs (99.6 per cent) are cultivating Millets in 57.4 hectors of land with a total production of 233.3 quintals. 240 HHs (98.27 per cent) are cultivating *Ragi* (Finger Millets) in 57.2 hectors of land with a total production of 232.3 quintals and yield rate of 4.1 quintals per hector. Further, only 1 HH is cultivating *Suan* (Little Millets) in 0.2 hectors of land, producing 1 quintal and yield rate of 4.9 quintals per hector.

3.2 In Jharigaon Block it was observed that 47 respondent HHs are cultivating Millets in 11 hectors of land, producing 55.3 quintals and the yield rate is 5 quintals per hector. In the Block, as shared above all 47 HHs are cultivating *Ragi* in 11 hector of land, producing 55.3 quintals with a yield rate of 5 quintals per hector. Not a single HH is found to be cultivating any other millet.

3.3 In Kosagumuda Block, it was found that 35 respondent HHs are cultivating *Ragi* in 10.3 hectors of land, producing 37.5 quintals. The average yield of *Ragi* is 3.5 quintals per hector. Not a single HH is found to be cultivating any other variety.

3.4 In Nabarangpur Block, it was observed that 62 respondent HHs are cultivating *Ragi* in 13.5 hector of land, producing 38.5 quintals. The yield rate is 2.8 quintals per hector. Other than *Ragi* not a single family is cultivating any other variety.

3.5 In Umerkote Block, it was found that 53 respondent HHs are cultivating *Ragi* in 9.6 hectors of land, producing 47.5 quintals with a yield rate of 4.9 quintals per hector. It was also found that in the Block no farmer is cultivating other variety of millets.

3.6 In Papadahandi Block, it was found that 43 respondent HHs are cultivating millets in 13 hectors of land, producing 56.4 quintals with a yield rate of 4.3 quintals per hector. In this case, the majority as mentioned above 43 respondents HHs are cultivating *Ragi* in 12.8 hector of land, producing 55.4 quintals. The average yield of *Ragi* is found to be 4.3 quintals per hector. It was also found that only one HH is cultivating *Suan* in 1.6 hectors of land and producing 1 quintal per hector with a yield rate of 4.9 quintals per hector.

3.5 As observed across the five Blocks in the District, out of the total 226 respondent HHs (56.5 percent) are using good quality if seeds, 173 HHs (43.3 per cent) are using the average quality and only 1 HH (0.3 per cent) shared that he has used the bad quality of millets seeds during the *Kharif* Session.

3.6 As far as the package of practices being used by the respondent HHs for millets (*Ragi &Suan*) are concerned, across the five Blocks in Nabarangpur District it is found that

99 HHs (43.6 per cent) are adopting broadcasting, 141 HHs (26.1 per cent) are using the Line Transplantation/ Line Sowing (LT/ LS) method, and nobody is cultivating millets by adopting the System of Millet Intensification (SMI).

3.7 Across the five Blocks in the District, the Baseline Survey 2018-19 found that the corresponding production of millets by adopting Broadcasting method by the 99 HHs is 89.45 quintals and by the 141 HHs by adopting the LT/LS the production is of 142.9 quintals, in this regard, while adopting the Broadcasting method the yield rate per hector is 4.7 quintals, and by adopting LT/LS the yield is 3.7 quintals per hector.

4 Consumption

4.1 In Nabarangpur District, across the five Blocks the pattern of consumption of millets based recipes was surveyed and found that the highest number i.e. 283 HHs (70.8 per cent) are taking millets during the Summer Season. It is followed by 225 HHs (56.3per cent) are taking the Winter Session and another 153 HHs (38.3 per cent) are taking millets during the Rainy Season.

4.2 **T**he Baseline Survey 2018-19 across the five Blocks in the District also reveals that consumption of the millets based recipes during different meals of a day (not mutually exclusive rather independent); it is observed that the highest number (67 per cent) are taking millets based recipes at the morning, followed by 21.3 per cent during their lunch, 19.3 per cent during the evening time and another 3.8 per cent of the respondent HHs are taking millets based recipes during the dinner time.

4.3 Findings of the Baseline Survey 2018-19 on the form and types of millet based recipes consumed by the respondent HHs across the five blocks in Nabarangpur District observed that 70.8 per cent of the respondent HHs are taking *Mandia Jau* (Porridge), 34 per cent taking Millet Cake, 0.8 per cent taking *Tempo* (a Semi Liquid Recipe), 4.5 per cent taking *Mandia Torani* (fermented Ragi), nobody is taking either *Handia* or *Roti* on a day to day basis.

5 Processing and Marketing of Millets

5.1 Across the five Blocks in Nabarangpur District, the Baseline Survey found that 67.5 per cent of the respondent HHs are processing/ milling millets manually and only 3.3 per cent are doing it through Machines far away from their village.

5.2 Marketing of the millets by the respondent HHs in the District is not mutually exclusive. As per the Baseline Survey 2018-19, out of the total 94 per cent of the HHs are selling their produce in the nearby Weekly Hat/ Market, 5.2 per cent sell to the Local Trader/ Middle Man who usually comes to their village and another 0.9 per cent of the respondent HHs sell their produce to the local Money Lender.

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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

Koraput district was divided into four districts in 1992; Nabarangpur District was one of them. Nabarangpur district covers an geographical area of 5294 Square Kilometers and its population includes a number of primitive tribal groups. It is full of forests, waterfalls, terraced

valleys, and meadows. Prior to that, it was a vast sub-division of the erstwhile Koraput District. Its boundary stretches in the north to Raipur and west to Bastar Districts of Chhattisgarh. The east side of Nabarangpur touches Kalahandi and Rayagada Districts and south to the Koraput Districts of Orissa. The river Indrāvati forms the border between Nabarangpur and Koraput Districts. Nabarangpur District covers an area of 5294 sq km. The District has a vast area of 1583.4 sq km covered by forests. It is situated at 20.3 to 17.5 Degree North latitude and 81.27 to 84.1 East longitudes.

The Administrative headquarters of the District is located at Nabarangpur city. At present Nabarangpur District comprise one sub division (Nabarangpur), 10 Tahsils and 10 blocks (Map 1.1). As per 2011 census (provisional) Nabarangpur District have 1220946 populations. More than ten types of tribes are living in the District covering half of the population. Sex ratio of Nabarangpur District is 1018. The tribes of Nabarangpur District mostly depend on cultivation and forest products for their livelihood. The border area of Nabarangpur District is somehow influenced by the language of Chhattisgarh in the west.

As per the Administrative set up is concerned there are 169 Gram Panchayats, 1 NAC (Umerkote) and 10 Police Stations in the District. The religion of the District is composite. There are Hindus, Christians and Muslims in good numbers with the tribal worshipping the Hindu gods. Like Mirganis, Snkharis, Malis and Sundhi, some other tribes such as Bhumias and Dombs are also residing here. Of these, the Mirganis appear to be a sub-caste of the Dombs. The Tribal dominating District of Nabarangpur has a relatively low literate population. The District holds total literates 490156 (Male 298688 and Female 191468). .

As per the 2011 Census, the district has 12.2 lakhs of population (Table 1.1) with 2.7 lakhs households. Predominantly an agricultural District, Nabarangpur has more than 90 per cent of its inhabitants depending on farming for their livelihood. The farming community largely depends on rains due to lack of irrigation facility. National Horticulture Mission is taking lots of steps to improve the cultivation of many fruits and vegetables in the District. Nabarangpur District is a treasure of many natural resources like iron, chlorite, mica, quartz etc. Heeraput village near Umerkote contains a fair deposit of hematite and limonite, each of which possesses about 60% iron. Similarly, Tentulikhunti area of Nabarangpur has fairly large deposits of granite.

The north of Nabarangpur District, up to the boarder of Kalahandi, has rock beds covering layers of coarse white quartz. Tough industrially this District is not that developed, all these minerals found in the District sustains the various industries in other parts of the country. The district holds 1019 as sex rate; it has 6.1 lakh total workers, 2.8 lakhs main and another 6.1 marginal workers. As per the 2018-19 data, the total production from the major crops are 777.7 000 Metric Tons with *Ragi* production of 1.8 000 Metric tons.

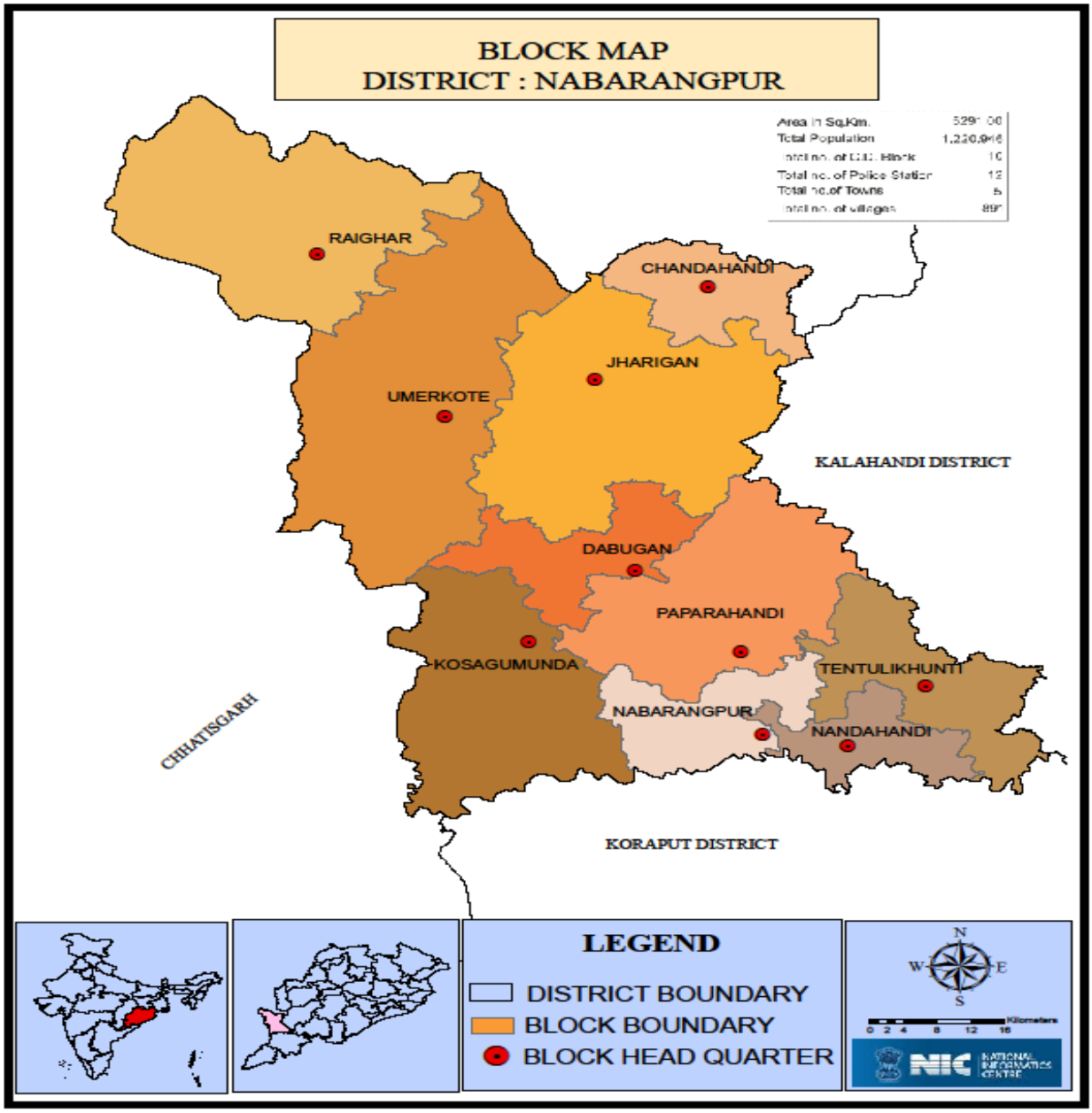
1.3 Objectives

Nabarangpur District consists of ten Blocks (Fig. 1.1), during 2017-18 while OMM began launching the Programme in the District. However, under the Phase – III as many as five more Blocks consisting of Nabarangpur, Papadahandi, Umerkote, Jharigaon and Kosagumuda were covered 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 and to
- Elucidate the method of processing and mode of marketing.

Fig-1.1: Map of Nabarangpur District



Source: http://gisodisha.nic.in/Block/NABARANGPUR.pdf

N.B: Baseline Survey 2018-2019 was conducted in the Nabarangpur Block, Papadahandi Block, Kosagumuda Block, Umerkote Block and Jharigaon Block (shown on the Political Map of Nabarangpur District (above) for implementing the Project titled "Special Programme for Promotion of Millets in Tribal Areas of Odisha" under Phase – III

Table 1.1: Key Indicators of Nabarangpur District

Indicators	Value
Census 2011	
Population (In Lakh.)	12.2
Male (In Lakh.)	6.0
Female (In Lakh.)	6.2
SC (In Lakh.)	1.8
ST (In Lakh.)	6.8
Others (In Lakh.)	3.6
Total HHs (In Lakh.)	2.7
Average HH Size (In Nos.)	4.5
Sex Ratio (In %)	1019
Workers	
Total Worker (In Lakh)	6.1
Main Worker (In Lakh)	2.8
Marginal Worker (In Lakh)	3.3
Non-Worker (In Lakh)	6.1
Work Participation Rate (WPR)	50.03
Literacy Rate (In %)	46.4
Land Use Pattern (Area in '000 ha), 2018-19*	
Total geographical Area (Sq. km)	5291
Forest	246
Land put to Non-agricultural use	44
Barren & Non-Cultivable Land	9
Permanent Pasture & Other Agricultural Land	8
Net Area Sown	176
Cultivable waste Land	15
Old Fallow	8
Current Fallows	10
Misc. Trees and Groves	13
Average Fertilizer Consumption per ha (In Kg/ha)	192.9
Agriculture, 2018-19*	
Total production of major crops (In '000 MT)	777.7
Total ***Ragi*** production (In '000 MT)	1.8
Irrigation Potential Created (Area in '000 ha.) * (2018-19)	
Kharif	65.7
Rabi	24.2
Other Information	
No. of Village Electrified (as on 31.03.19)	868
No. of Banks (as on 31.03.19	64
No. of AWC	2207
No. of PDS Centres (2011)	776
No. of Job Card Issued(2014-15)	226715
No. of Beneficiaries provided employment in MGNREGS (2014-15)	60829

Source: District Statistical Hand book, Nabarangpur district-2015

*District at a Glance-2020

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 Nabarangpur, Papadahandi, Kosagumuda, Umerkote and Jharigaon Blocks have been selected by the Odisha Millets Mission's Programme as well as Research Secretariat as it is one among the additional 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 Nabarangpur, Papadahandi, Kosagumuda, Umerkote and Jharigaon Blocks are selected. Nevertheless, all the respondent HHs 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 1817 HHs covering 349 participant/ beneficiary and 1468 non-participant farmer households spread across 147 villages, 35 Gram Panchayats covering the three Blocks in Nabarangpur 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 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. From the 400 surveyed households selected for the Baseline Survey 2018-19 under Phase -III, total 157 were participant households and 243 were non-participant households.

Out of the total enlisted 1817 farming Households (HHs) 275 HHs (29.1 per cent) are enlisted in Jharigaon Block, 284 HHs (34.2 per cent) in Kosagumuda Block, 170 HHs (47.1 per cent) in Nabarangpur Block, 544 HHs (14.7 per cent) in Papadahandi Block and another 594 HHs (13.5 per cent) in Umerkote Block were enlisted and planned to be covered under the OMM

Programme. Under the Baseline Survey 2018-19, total 400 number of sample HHs were selected for primary data collection covering 20 Villages, under 10 GPs in the said five Blocks (Table 1.2) in the Nabarangpur District.

Table 1.2: Households Surveyed in Nabarangpur District

Blocks	Programme HHs (No.)	Surveyed HHs (No.)	Sample		% of the HHs Covered under the Study
			Participants 2018-19	Non-Participants 2018-19	
Jharigaon	275	80	28	52	29.1
Kosagumuda	234	80	31	49	34.2
Nabarangpur	170	80	28	52	47.1
Papadahandi	544	80	31	49	14.7
Umerkote	594	80	39	41	13.5
Total	1817	400	157	243	22.0

Source: WASSAN & Field Survey.

In Jharigaon Block under the Chancharaguda Gram Panchayat (GP) 48 HHs consisting of 28 HHs from Souraguda Village and 20 HHs from Hurugudi 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 Baseline Survey and data collection. For Baseline Survey 2018-19 in the Block 28 participating HHs, and another 62 non-participating HHs were selected for the study.

In Kosagumuda 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 Baseline Survey 2018-19 in the Block 31 participating HHs, and another 49 non-participating HHs were selected for the study.

In Nabarangpur Block, under Patraguda GP38 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 Baseline Survey 2018-

19 in the Block 28 participating HHs, and another 52 non-participating HHs were selected for the study.

In Papadahandi 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 Baseline Survey 2018-19 in the Block 31 participating HHs, and another 49 non-participating HHs were selected for the study.

Likewise in Umerkote 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 Baseline Survey 2018-19 in the Block 39 participating HHs, and another 41 non-participating HHs were selected for the study.

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 under 10 Revenue Villages covering 10 GPs all five Blocks were visited by the NCDS Policy Research Team for Back Check Verification. 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 the 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 Nabarangpur 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 - III is limited to only five Blocks of the Nabarangpur District. 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.

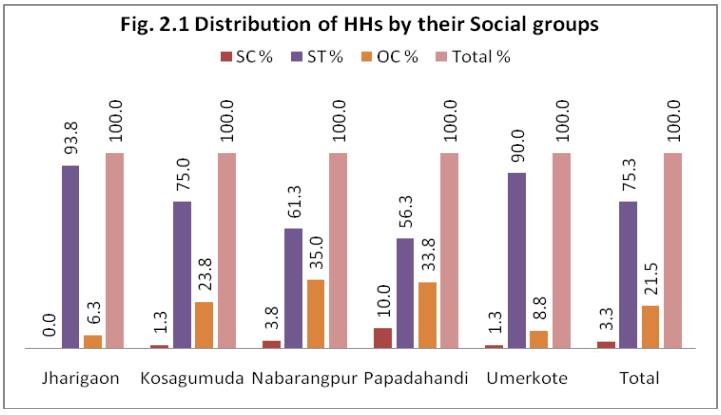
2
SOCIO-ECONOMIC PROFILE OF THE HOUSEHOLDS SURVEYED

2.1 Introduction

This chapter looks into the social, economic and demographic profile of the respondent HHs under the Phase – III 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 umber of economic activities at the same time. It has also made an attempt to capture the 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 Nabarangpur District total 400 HHs were interviewed consisting of 301 HHs (75.3 percent) as the Scheduled Tribe (ST), 13 HHs (3.3 per cent) as Scheduled Caste (SC) and another 86 HHs (21.5 percent) as the Other Castes (OC). In Jharigaon Block there are 75 ST respondents HHs (93.8 percent), no SC HHs (0 per cent) and 5 HHs (6.3 per cent) belong to the OC category. Likewise, in Kosagumuda Block there are 60 ST HHs (75 per cent) respondents, 1 SC household (1.3 per cent) and 19 respondent HHs (23.8 per cent) belonged to the OC category. In Nabarangpur Block, among the respondent HHs there are 49 ST HHs (61.3 per cent), 3 SC HHs (3.8 per cent) and 28 OC HHs (35 per cent) were there. In the same way, in Papadahandi Block there were 45 HHs (56.3 per cent) were ST, 8 HHs (10.0 per cent) Respondent HHs were SC and



another 27 HHs (33.8 per cent) were OC. In Umerkote Block there are 72 HHs (90 per cent) ST, 1 HH (1.3 per cent) SC and another 7 HHs (8.8 per cent) belonged to the OC Category.

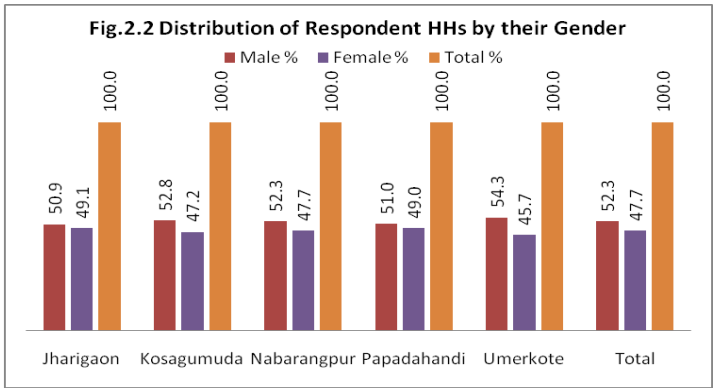
Data comparison (Table 2.1), among the five selected Blocks of Nabarangpur District reveals that highest number i.e. 75 farmer HHs (93.8 per cent) belonging to ST and out of the total 80 respondent farmer HHs are cultivating millets in Jharigaon Block. Whereas in Umerkote Block, out of the total 80 HHs surveyed there were 72 millets farmers (90 percent) belonged to the ST Community. It is also observed that in the Nabarangpur District, across the five blocks after the ST farming HHs, the OC Farmers i.e. 86 HHs (21.5 per cent) comes next and it is followed by the number of the SC Farmers that is counted as the least i.e. 13 HHs (3.3 per cent).

Table 2.1: Distribution of Households by heir Social Groups across the blocks

Blocks	SC		ST		OC		Total	
	No	%	No	%	No	%	No	%
Jharigaon	0	0.0	75	93.8	5	6.3	80	100.0
Kosagumuda	1	1.3	60	75.0	19	23.8	80	100.0
Nabarangpur	3	3.8	49	61.3	28	35.0	80	100.0
Papadahandi	8	10.0	45	56.3	27	33.8	80	100.0
Umerkote	1	1.3	72	90.0	7	8.8	80	100.0
Total	13	3.3	301	75.3	86	21.5	400	100.0

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

As per the Baseline Survey (Table 2.2 and Fig.2.2), the total respondents HHs population in Nabarangpur District across the surveyed five Blocks comes up to 1726, consists of 902 (52.3 per cent) male and another 824 female (47.7 per cent).



As far as the respondent household's population in each of the five Block of the District is concerned, it is 338 in Jharigaon Block, 375 in Kosagumuda Block, 310 in Nabarangpur Block, 351 in

Papadahandi Block and another 352 in Umerkote block. Out of the total population, the Block wise sample population by gender or Male is concerned it 172 (50.9 per cent) in Jharigaon Block, 162 (52.3 per cent) in Nabarangpur Block, 179 (51 per cent) in Papadahandi Block, 191 (54.3 per cent) in Umerkote Block and 198 (52.8 per cent) in Kosagumuda Block. Comparison across the five selected and surveyed Blocks in Nabarangpur District shows that the average male population (52.3 per cent) is found to be higher to the female (47.7 per cent).

Table 2.2: Distribution of Population by Gender across the blocks

Blocks	Male		Female		Total	
	No	%	No	%	No	%
Jharigaon	172	50.9	166	49.1	338	100.0
Kosagumuda	198	52.8	177	47.2	375	100.0
Nabarangpur	162	52.3	148	47.7	310	100.0
Papadahandi	179	51.0	172	49.0	351	100.0
Umerkote	191	54.3	161	45.7	352	100.0
Total	902	52.3	824	47.7	1726	100.0

Source: Field Survey

In Nabarangpur District, across the five selected Blocks, distribution of the total respondent HHs consists of 80 HHs from Jharigaon Block, 80 HHs from Kosagumuda Block, 80 HHs from Nabarangpur Block, 80 HHs from Papadahandi Block, and another 80 HHs from Umerkote Block. Distribution of the HHs population across the five Blocks by their religion reveals that the total 400 respondents HHs (100 per cent) belong to Hindu religion (Table 2.3 and Fig.2.3) and not a single respondent HH belonged to any other religion other than Hindu religions.

Table 2.3: Distribution of Households by their Religion across the blocks

Blocks	Hindu		Christian		Total	
	No	%	No	%	No	%
Jharigaon	80	100.0	0	0.0	80	100.0
Kosagumuda	80	100.0	0	0.0	80	100.0
Nabarangpur	80	100.0	0	0.0	80	100.0
Papadahandi	80	100.0	0	0.0	80	100.0
Umerkote	80	100.0	0	0.0	80	100.0
Total	400	100.0	0	0.0	400	100.0

Source: Field Survey

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

In Nabarangpur District, across the five Blocks consisting of Jharigaon, Kosagumuda, Nabarangpur, Papadahandi and Umerkote not a single HH belong to the Above Poverty Line (APL) category rather all 400 sample respondent HHs belong to the Below Poverty Line (BPL) category. Hence, it is revealed that incidence of poverty among the sample respondents HHs is found to be the highest (Table 2.4 and Fig. 2.4). In all the five blocks along with the primary data collection from the respondent HHs, and Focused Group Discussions (FGDs) was also held to verify the incidence of poverty data.

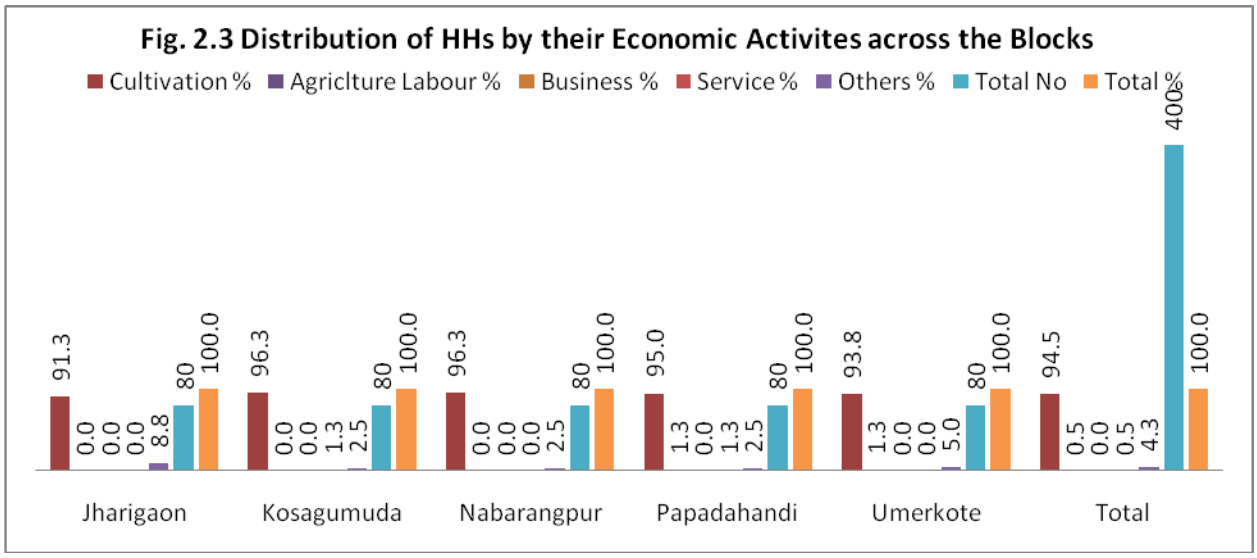
Table 2.4: Distribution of HHs by Incidence of Poverty across the blocks

Blocks	BPL		APL		Total	
	No	%	No	%	No	%
Jharigaon	80	100.0	0	0.0	80	100.0
Kosagumuda	80	100.0	0	0.0	80	100.0
Nabarangpur	80	100.0	0	0.0	80	100.0
Papadahandi	80	100.0	0	0.0	80	100.0
Umerkote	80	100.0	0	0.0	80	100.0
Total	400	100.0	0	0.0	400	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 400 respondent HHs (Table 2.5) has been analyzed and has also been shown in Fig.2.5.

Table 2.5 Distribution of Households by their Economic Activities across the blocks

Blocks	Cultivation		Agriculture Labour		Business		Service		Others		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
Jharigaon	73	91.3	0	0.0	0	0.0	0	0.0	7	8.8	80	100.0
Kosagumuda	77	96.3	0	0.0	0	0.0	1	1.3	2	2.5	80	100.0
Nabarangpur	77	96.3	0	0.0	0	0.0	0	0.0	2	2.5	80	100.0
Papadahandi	76	95.0	1	1.3	0	0.0	1	1.3	2	2.5	80	100.0
Umerkote	75	93.8	1	1.3	0	0.0	0	0.0	4	5.0	80	100.0
Total	378	94.5	2	0.5	0	0.0	2	0.5	17	4.3	400	100.0

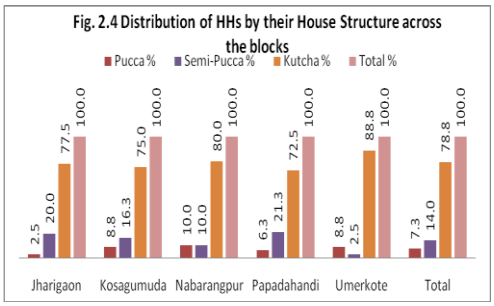
Source: Field Survey
Note: Activities total are not additive, as activities are not mutually exclusive.

As found in the Baseline Survey 2018-19 (Table 2.5), across the five Blocks in Nabarangpur District out of the total sample 400 HHs participated in the discussion and primary data collection process. It was revealed that 378 HHs (94.5 per cent) are doing agriculture (cultivation) that is found to be the primary and major activity in comparison to the other income generation activities. As supplementary income generation activities a number of other activities are found to be practiced by the respondent HHs such as other/ ancillary activities i.e. 17 HHs (4.3 per cent), 2 HHs (0.5 per cent) are engaged in the service sector, nobody in the Business but another 2 HHs (0.5 per cent) are engaged in the 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 Jharigaon Block it is 73 HHs (91.3 per cent), 77 HHs (96.3 per cent) in Kosagumuda Block, 77 HHs (96.3 per cent) in Nabarangpur Block, it is found to be 76 HHs (95 per cent) in Papadahandi Block and 75 HHs (93.8 per cent) in Umerkote 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 to determine the status of the HHs whether it is 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 also busy in some other minor income generation activities throughout the year. In the District it was also revealed 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 2018-19, in Phase – III data were collected and compiled across the selected five Blocks in Nabarangpur District. It is observed that across the blocks in Nabarangpur District out of the total 400 HHs surveyed (Table 2.6 & Fig. 2.6) surveyed 56 HHs (14 per cent) are found to be having *Semi-Pucca* houses. In this regard, the highest number of HHs that is 315 (78.8 per cent) as *Kutcha* houses and 29 HHs (7.3 per cent) are found to be having the *Pucca* Houses.

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

Blocks	Pucca		Semi-Pucca		Kutcha		Total	
	No	%	No	%	No	%	No	%
Jharigaon	2	2.5	16	20.0	62	77.5	80	100.0
Kosagumuda	7	8.8	13	16.3	60	75.0	80	100.0
Nabarangpur	8	10.0	8	10.0	64	80.0	80	100.0
Papadahandi	5	6.3	17	21.3	58	72.5	80	100.0
Umerkote	7	8.8	2	2.5	71	88.8	80	100.0
Total	29	7.3	56	14.0	315	78.8	400	100.0

Source: Field Survey

As observed, across the five Blocks in Nabarangpur District in Umerkote Block has the highest number i.e. 71 HHs (88.8 per cent) are having the *Kutcha* houses, whereas Nabarangpur Block has the second highest number of *Kutcha* Houses i.e. 64 (80 per cent). Moreover, it was also revealed that among the respondent HHs across the Blocks in Nabarangpur Block 8 HHs (10 per cent) are having the *Pucca* houses. As far as the number of *Semi Pucca* houses among the

respondent HHs across the five Blocks, it is found that 17 HHs (21.3 per cent) in Papadahandi Block, 16 HHs (20 per cent) in Jharigaon Block, 13 HHs (16.3 per cent) in Kosagumuda Block and another 8 HHs (10 per cent) in Nabarangpur Block.

2.6 Conclusion

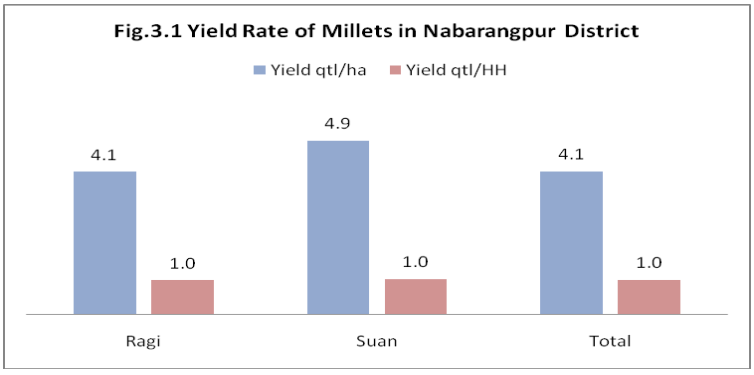
From the various social and economic data mentioned in the Table No. 2.1 to 2.6 and are also being shared through the Figures 2.1 to 2.6, the findings as well as its corresponding analysis indicates that all 400 HHs (100 per cent) of the total respondent farming households across the five Blocks in Nabarangpur District belong to the BPL Category. Across the five blocks in the District, it was also found that an average of 94.5 per cent of the respondent HHs are primarily also engaged in cultivation (agriculture) activities. Moreover, in the district across the five Blocks out of the total 400 households surveyed during the Baseline Survey 2018-19 the highest 315 HHs (78.8 per cent) are having the *Kutcha* houses, 56 HHs (14 per cent) the second highest are having the *Semi-Pucca* Houses and only 29 HHs (7.3 per cent) are having the *Pucca* houses.

3
PRODUCTION

3.1 Introduction

Along with assessment of social and economic status of the millets and other farmers in Nabarangpur District across the five Blocks such as Jharigaon, Kosagumuda, Nabarangpur, Papadahandi and Umerkote Blocks the Baseline Survey 2018-19 has made a sincere attempt to capture the ground reality on the exact process being followed by the respondent HHs in production, about the package of millets agricultural practices as well as its productivity. Under the production practices of millets cultivation the seed selection process, the exact sources of the seeds that are being used, the quality of the seeds, process followed for preserving the seeds, process of sowing seeds during cultivation as well as the productivity has been captured and analyzed as follows.

3.2 Area, Production and Yield of Millets



As found in the Baseline Survey, across the five Blocks in Nabarangpur District there are mainly two types of millets being produced by the Farmers such as *Ragi and Suan.* Across the five Blocks in the District it is observed that *Ragi and Suan* are being cultivated mainly during the *Kharif* Season.

It was found that out of the 400 respondent HHs in the District, only 240 HHs cultivated and another 160 HHs did not cultivate millets in the last *Kharif* Session. The total quantity of *Ragi and Suan* produced across the five Blocks by the 240 millets farming HHs is found to be 233.3 quintals from 57.4 hectors of land (Table 3.1 & Fig.3.1). In the District across the five Blocks it is also observed that the average yield per hector of *Ragi* is 4.1 quintals per hector and the average yield of *Suan* is 4.9 quintals per hector. It is also found that across the five Blocks in

Nabarangpur District the yield per HH of *Ragi* is 1.0 quintals, and the yield of *Suan* per HH that is found to be same i.e. 1.0 quintals (Fig. 3.1 & Table 3.1).

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

Millets	HHs		Area		Production		Yield	
	No	%	ha	%	qtl	%	qtl/ha	qtl/HH
Ragi	240	99.6	57.2	99.7	232.3	99.6	4.1	1.0
Suan	1	0.4	0.2	0.4	1.0	0.4	4.9	1.0
Total	240	100.0	57.4	100.0	233.3	100.0	4.1	1.0

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.

Across the five blocks in Nabarangpur District, especially in Jharigaon Block the production of *Ragi* is found to be 55.3 quintals from 11.0 hectors of cultivation. In the Block *Ragi* is cultivated by 47 farming HHs and it is also revealed that not a single HH has cultivated *Suan* having no production (Table 3.2 and Fig.3.2). As far as the yield rate of millets at the HHs level in Jharigaon Block is concerned, for *Ragi* it is 1.2 quintal per HH and not a single family has cultivated *Suan* leading to no production. The yield rate of *Ragi* per hector is found to be 5.0 quintals and not a single family has cultivated *Suan* leading to no yield.

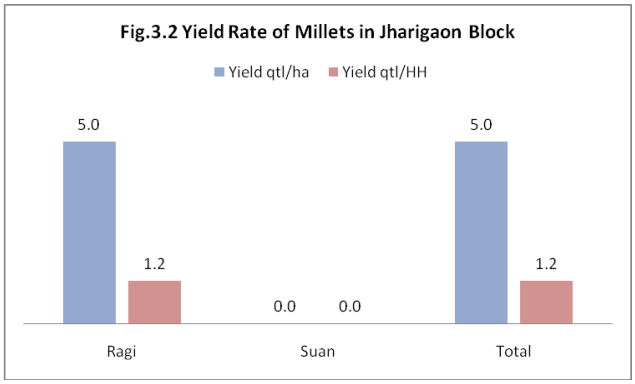
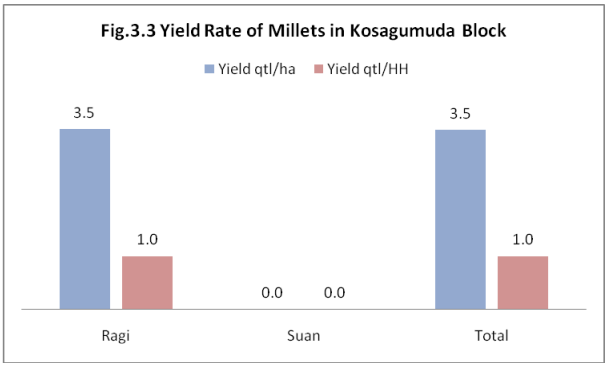


Table 3.2: Area, Production and Yield of Millets in Jharigaon Block

Millets	HHs		Area		Production		Yield	
	No	%	ha	%	qtl	%	qtl/ha	qtl/HH
Ragi	47	100.0	11.0	100.0	55.3	100.0	5.0	1.2
Suan	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	47	100.0	11.0	100.0	55.3	100.0	5.0	1.2

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.



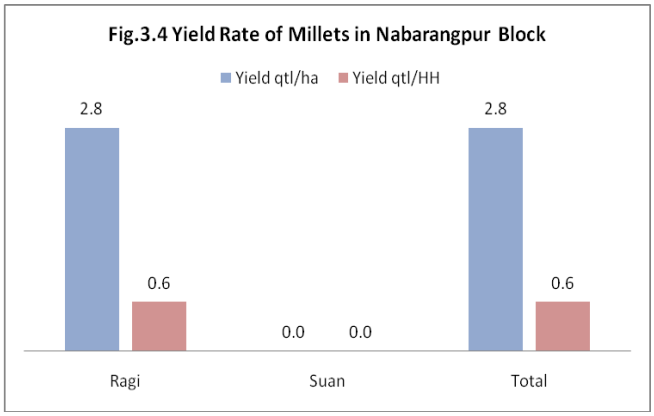
As it is found in the Baseline Survey 2018-19, in Kosagumuda Block (Table 3.3 and Fig. 3.3) out of the total HHs surveyed, 35 HHs (100.0 per cent) have cultivated *Ragi* in 10.3 hectors of land, producing 35.7 quintals. In case of *Ragi*, it is also found that the yield rate at the HH level it is 1.0 quintals and per hector it is 3.5 quintals. In the Block, it was also found that not a single HH has cultivated *Suan*.

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

Millets	HHs		Area		Production		Yield	
	No	%	ha	%	qtl	%	qtl/ha	qtl/HH
Ragi	35	100.0	10.3	100.0	35.7	100.0	3.5	1.0
Suan	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Total	35	100.0	10.3	100.4	35.7	100.0	3.5	1.0

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.



It was also observed that in Nabarangpur Block, during the last *Kharif* Season out of the total respondent HHs, 62 HHs have cultivated *Ragi*, and not a single HHs has cultivated *Suan* (Fig. 3.4 & Table 3.4). In the Block, the Baseline Survey 2018-19 found that the 62 farmer families are cultivating *Ragi* in 13.5 hectors of land with a total production of 38.5 quintals, at the rate of 2.8 quintals per hector and 0.6 quintals per HH.

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

Millets	HHs		Area		Production		Yield	
	No	%	ha	%	qtl	%	qtl/ha	qtl/HH
Ragi	62	100.0	13.5	100.0	38.5	100.0	2.8	0.6
Suan	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	62	100.0	13.5	100.0	38.5	100.0	2.8	0.6

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 Papadahandi Block the Baseline Survey 2018-19 also observed that in the Block out of the total HHs, 43 HHs have cultivated *Ragi* in 12.8 hectors of land with a total production of 55.4 quintals. In this case the yield of *Ragi* per hector is 4.3 quintals and 1.3 quintals per HH. In the same way, out of the total only 1 HH has cultivated *Suan* in 1.6 hectors of land with a total production of 1 quintal. However, in this case the yield rate is bit higher i.e. 4.9 quintals per hector and 1 quintal per HH (Fig. 3.5 & Table 3.5).

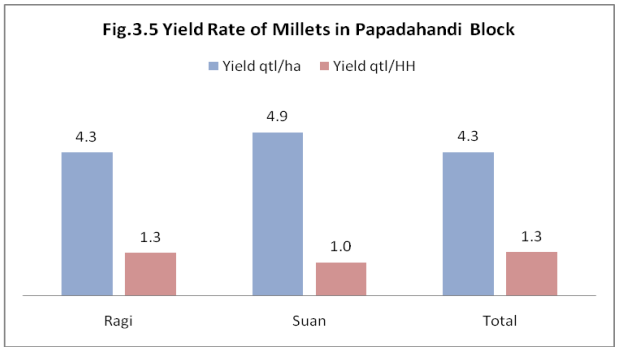


Table 3.5: Area, Production and Yield of Millets in Papadahandi block

Millets	HHs		Area		Production		Yield	
	No	%	ha	%	qtl	%	qtl/ha	qtl/HH
Ragi	43	100.0	12.8	98.4	55.4	98.2	4.3	1.3
Suan	1	2.3	0.2	1.6	1.0	1.8	4.9	1.0
Total	43	100.0	13.0	100.0	56.4	100.0	4.3	1.3

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 revealed that in the Umerkote Block out of the total respondent HHs, 53 HHs have cultivated *Ragi* in 9.6 hectors of land with a total production of 47.5 quintals. In this case, the yield rate is 4.9 quintals per hector and 0.9 quintals per HH. In the block, the Baseline Survey 2018-19 also observed that not a single HH has cultivated *Suan, Kangu or Janha*.

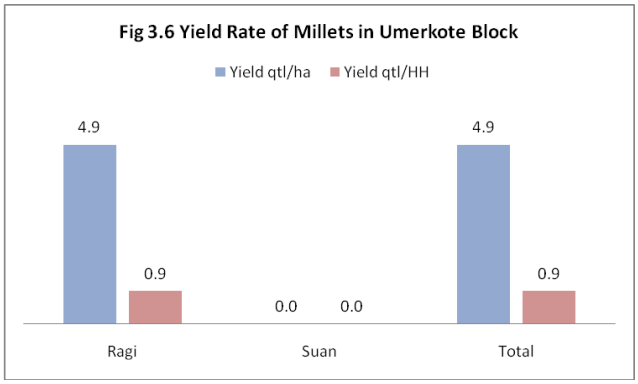


Table 3.6: Area, Production and Yield of Millets in Umerkote block

Millets	HHs		Area		Production		Yield	
	No	%	ha	%	qtl	%	qtl/ha	qtl/HH
Ragi	53	100.0	9.6	100.0	47.5	100.0	4.9	0.9
Suan	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	53	100.0	9.6	100.0	47.5	100.0	4.9	0.9

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.

3.3 Perception of Farmers on the Quality of Seeds Used

As per the Baseline Survey 2018-19 and as per the respondent millet farming households in Nabarangpur 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. During the Survey, through this question, an attempt was made to know the general perception of all the respondents HHs, irrespective of the millets farmers or not to know their view about using good, average or bad quality of seeds in their agricultural practices as a whole.

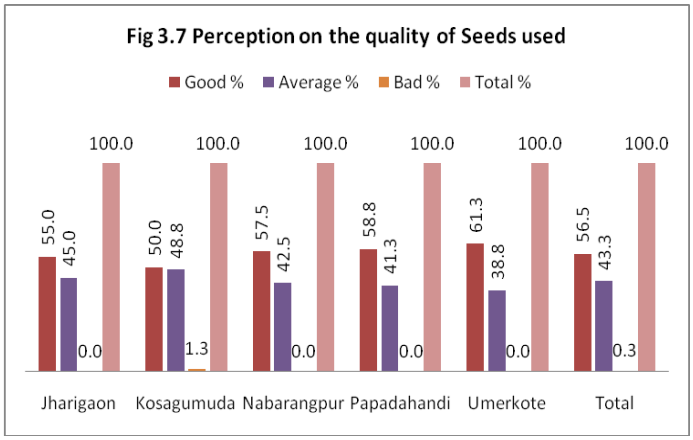


Table 3.7: Perception of Respondents on the quality of seeds used

Blocks	Good		Average		Bad		Total	
	No.	%	No.	%	No.	%	No.	%
Jharigaon	44	55.0	36	45.0	0	0.0	80	100.0
Kosagumuda	40	50.0	39	48.8	1	1.3	80	100.0
Nabarangpur	46	57.5	34	42.5	0	0.0	80	100.0
Papadahandi	47	58.8	33	41.3	0	0.0	80	100.0
Umerkote	49	61.3	31	38.8	0	0.0	80	100.0
Total	226	56.5	173	43.3	1	0.3	400	100.0

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 NGO or any such sources as such. It was revealed that most of the farming HHs across the five Blocks in Nabarangpur District are found to be using the locally available, tested over the years and traditionally preserved seeds. In the whole district, across the five blocks responses of total 400 millets and non-millets farming HH's were collected and analyzed. Out of the total 80 HHs in Jharigaon Block, 44 HHs (55 per cent) shared that the quality of the seeds being used by them during the last *Kharif* Season was of good quality, another 36 HHs (45 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 of bad quality (Table 3.7 & Fig.3.7).

Likewise, according to the Baseline Survey 2018-19, in Nabarangpur Block out of the total respondents, 46 HHs (57.5 per cent) reveals that the seed being used by them during the last *Kharif* Season was of good quality. Another 34 HHs (42.5 per cent) told that the seeds being used by them are average and only one HH (1.37 percent) shared 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.

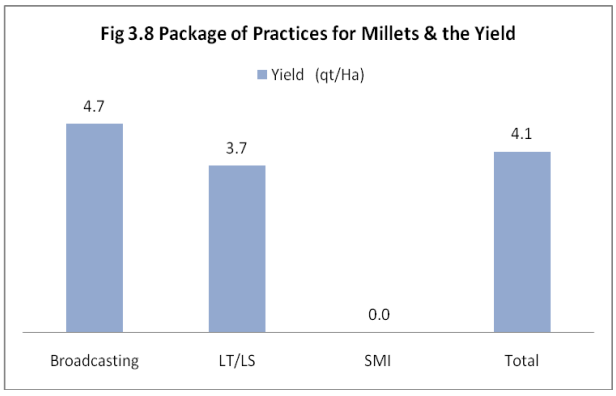
In the same way, in Kosagumuda Block out of the total respondents, 40 HHs (50 per cent) farmer respondent households revealed that the seed being used by them was good; again 39 HHs (48.8 per cent) told that it was of average quality and not a single HH shared that it was

of bad quality. In Papadahandi Block, out of the total responders 47 respondent HHs (58.8 per cent) told that the seed quality being used by them are good, 33 HHs (41.3 per cent) told that the seed being used by them was average, and nobody said that the seed quality was of bad quality.

In Umerkote Block, out of the total respondents 49 respondent HHs (61.3 per cent) told that the seed quality being used by them are good, 31 HHs (38.8 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 Nabarangpur District across the five Blocks, out of the total 400 respondent HHs, millets are being cultivated by 240 HHs. They might have adopted either Broadcasting or the Line Transplantation (LT)/ Line Sowing (LS) or SMI methods or even any two or all three of them. To know that specific questions were asked to the farmers and the result are as follows.



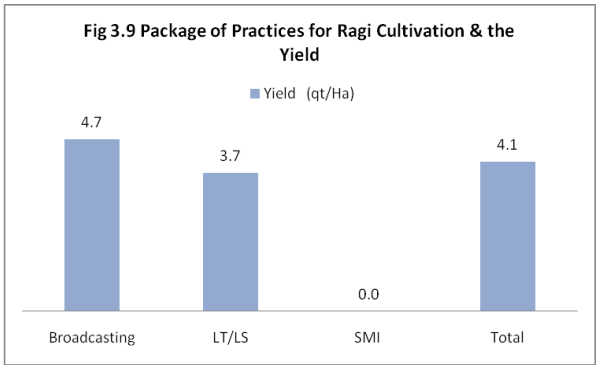
To extract the outcome of adopting the different package of practices per hector, the yield rate of Millets across the five blocks in Nabarangpur District has been calculated (Fig. 3.8 & Table 3.8). In this case, as revealed by the respondent HHs when the broadcasting method was adopted by the 99 respondent HHs (43.6 per cent) in 19.1 hectors of land their production was 89.45 quintals and their yield per hector was found to be 4.7 quintals. When the Line Transplantation (LT)/ Line Sowing (LS) was adopted by as many as 141 HHs was analyzed it was found that they covered an area of 62.1 hectors with a total production of 142.9 quintals. In this case the yield

was found to be 3.7 quintals per hector. Nevertheless, it was also found that not a single HH has adopted the System of Millets Intensification (SMI) method.

Table 3.8: Package of Practices of Millets Cultivation across the Blocks

Package of practices	HHs		Area		Production		Yield
	No	%	ha	%	Qtl	%	(qt/Ha)
Broadcasting	99	43.6	19.1	33.4	89.45	38.5	4.7
LT/LS	141	62.1	38.1	66.6	142.9	61.5	3.7
SMI	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	240	100.0	57.2	100.0	232.3	100.0	4.1

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.



The Baseline Survey also found that in case of *Ragi* cultivation, across the five blocks in Nabarangpur District it was found that out of the total HHs, 99 farmer HHs (43.6 per cent) has adopted the broadcasting method and has cultivated in 19.1 hectors of land, got 89.45 quintals of *Ragi*. It was also revealed that in this case the yield rate was found to be 4.7 quintals per hector (Table 3.9 and Fig. 3.9).

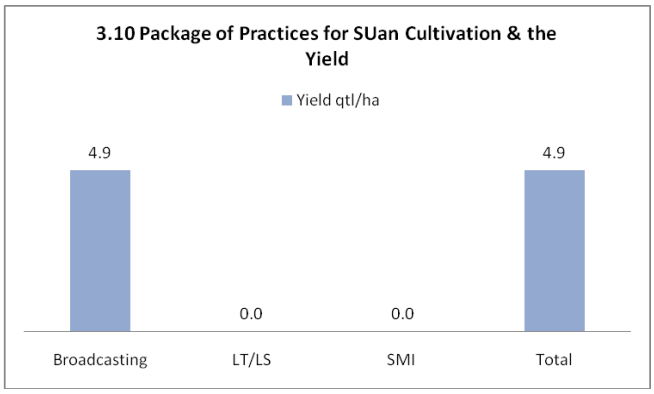
It was also found that out of the total 141 HHs (62.1 per cent) has cultivated *Suan* by adopting LT/ LS or SMI (Table 3.9 & Table 3.9). They have cultivated in 38.1 hectors of land with a total production of 89.45 quintals. In this case the yield of *Rag*i per hector across the five Blocks was found to be 3.7 quintals.

Table 3.9: Package of Practices for Ragi Cultivation across the Blocks

Package of practices	HHs		Area		Production		Yield
	No	%	ha	%	qtl	%	(qt/Ha)
Broadcasting	99	43.6	19.1	33.4	89.45	38.5	4.7
LT/LS	141	62.1	38.1	66.6	142.9	61.5	3.7
SMI	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	240	100.0	57.2	100.0	232.3	100.0	4.1

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.



To be specific, the Baseline Survey found that in case of *Suan* cultivation, across the five blocks in Nabarangpur District it was found that out of the total only one farmer HHs (Table 3.10 & Table 3.10) has adopted the broadcasting method, has cultivated in 0.2 hectors of land, got only 1.0 quintal of *Suan* and the yield rate is 4.9 quintals per hector. In the same way, it was also revealed that not a single HH has cultivated *Suan* by adopting LT/ LS or the SMI method.

Table 3.10: Package of Practices of *Suan* Cultivation across the Blocks

Package of practices	HHs		Area		Production		Yield
	No	%	ha	%	qtl	%	qtl/ha
Broadcasting	1	100.0	0.2	100.0	1.0	100.0	4.9
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	1	100.0	0.2	100.0	1.0	100.0	4.9

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 Nabarangpur District, across the five Blocks it was found that *Ragi and Suan* are cultivated. *Ragi* is cultivated by 240 HHs in 57.2 hectors of land. It is also found that *Suan* is cultivated by only one HHs covering 0.2 hector with a production of 1 quintal with a yield rate of 4.1 quintal per hector. It was also revealed that across the five Blocks in the District, out of the total 56.5 per cent of the HHs used good quality of seeds, 43.3 per cent of the total HHs used the average quality seeds and only 0.3 per cent HH used bad quality seeds.

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

4
CONSUMPTION

4.1 Introduction

Millets production, consumption and marketing are inter-related and depend 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 and non-millets farming respondent HHs have been discussed. Based on the findings of the Baseline Study 2018-19 conducted in Nabarangpur District across the five Blocks consisting of Jharigaon, Nabarangpur, Kosagumuda, Papadahandi and Umerkote 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 by the respondent HHs 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 Nabarangpur Distircs are asked and Focussed Group Discussions (FGDs) were also held at the village level. Across the five Blocks, as shared by the people of the respondent HHs at the villege level (Table 4.1 and Fig. 4.1), they consume millets based recipes, which is not mutually exclusive rather independent.

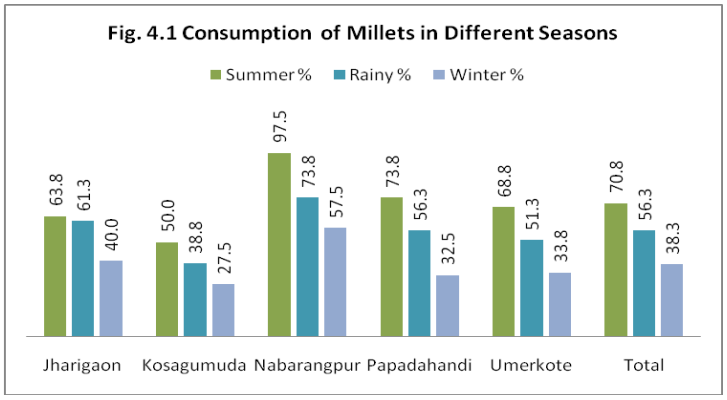


Fig. 4.1 Consumption of Millets in Different Seasons

As revealed in the Baseline Survey, across the five Blocks in Nabarangpur District out of the total 283 respondents HHs (70.8 per cent) prefer to consume more millets recipes during the Summer Season in comparision to 225 HHs (56.3 per cent) during the Rainy Season or 153 HHs (38.3 per cent) during the Winter Season. It is also found in the Baseline Survey that in Jharigaon out of the total 80 HHs, 51 HHs (63.8 per cent) shared that

they take millets during the Summer Season, 49 HHs (61.3 per cent) take during the Rainy and another 32 HHs (40 per cent) told that they take millets during the Winter Session.

Likewise, in Kosagumuda Block it was observed by the Baseline Survey 2018-19 that 40 HHs (50 per cent) take millets during Summer Season, 31 HHs (38.8 per cent) takes during the Rainy Season and another 22 HHs (27.5 per cent) takes during the Winter Session. In Nabarangpur Block, it was found that 78HHs (97.5 per cent) during the Summer Season, 59 HHs (73.8 per cent) during the Rainy Season and another 46 HHs (57.5 per cent) take during the Winter Season. Likewise in Papadahandi Block it is also found that 59 HHs (73.8 per cent) take during the Summer Season, 45 HHs (56.3 per cent) during the Rainy Season and 26 HHs (32.5 percent) during the Winter Season. It is also revealed that in Umerkote Block 55 HHs (68.8 per cent) take during the Summer Season, 41 HHs (51.3 per cent) take during the Rainy Season and another 27 HHs (33.8 per cent) take millets during the Winter Season.

Table 4.1: Consumption of Millets in different Seasons

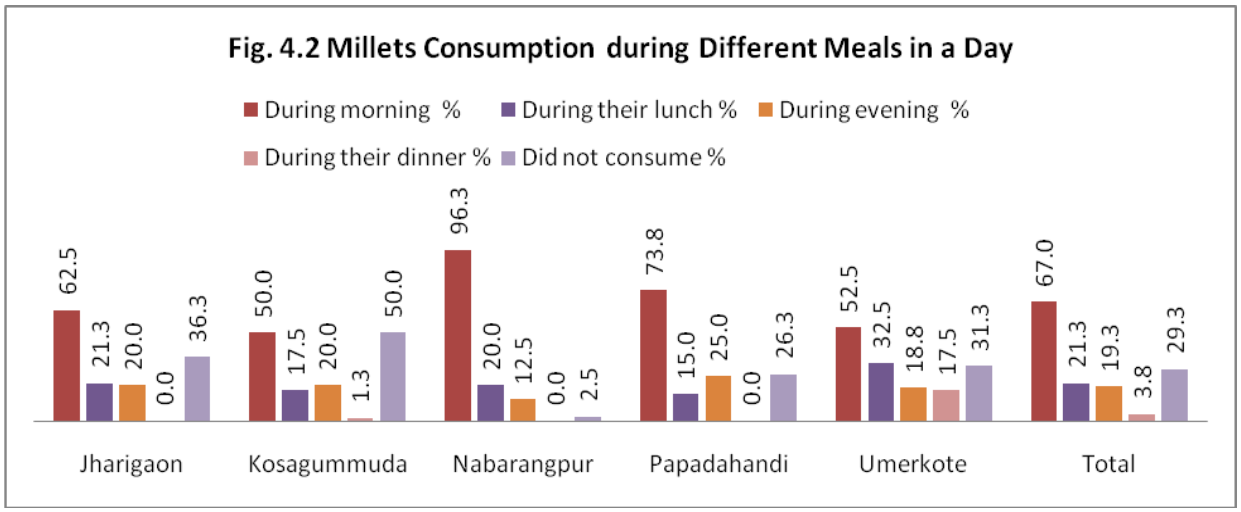
Blocks	No of HHs	Summer		Rainy		Winter		Total HHs consumed millets	
		No.	%	No.	%	No.	%	No.	%
Jharigaon	80	51	63.8	49	61.3	32	40.0	51	63.8
Kosagumuda	80	40	50.0	31	38.8	22	27.5	40	50.0
Nabarangpur	80	78	97.5	59	73.8	46	57.5	78	97.5
Papadahandi	80	59	73.8	45	56.3	26	32.5	59	73.8
Umerkote	80	55	68.8	41	51.3	27	33.8	55	68.8
Total	400	283	70.8	225	56.3	153	38.3	283	70.8

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

4.3 Consumption of Millets during Different Meals in a Day

The Baselien Survey 2018-19 across the five Blocks in Nabarangpur District reveals that throughut the day the respondent HHs do physical labour under the Sun, hence, to releive from being hydrated or to get rid of even the Sun Strokes they prefer to take the millet based recipes. It is also found in the Baseline Survey that the food intake pattern of the respondent HHs in Nabarangpur District across the Blocks millets based recipes are found to be the most essential

part of their daily life. It ia also found that taking various millets based recipes is not mutually exclusive rather independent.



As reflected in the the Table 4.2 and Fig. 4.2, out of the total 400 respondent HHs in Nabarangpur District across the five Blocks as many as 268 HHs (67 per cent) take millets based recipes during the morning time. It is being followed by the Lunch when 85 HHs (21.3 per cent), during the Dinner 15 HHs (3.8 per cent) and during the Evening time 77 HHs (19.3 per cent) take millets based recipes. Through the five selected Blcoks in the district, among the respondent HHs it was also found that as mmany as 177 HHs (29.3 per cent) do not take such recipes at all.

Table 4.2: Millets Consumption during Different Meals in a Day

Blocks	During morning		During their lunch		During evening		During their dinner		Did not consume		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Jharigaon	50	62.5	17	21.3	16	20.0	0	0.0	29	36.3	80	100.0
Kosagumuda	40	50.0	14	17.5	16	20.0	1	1.3	40	50.0	80	100.0
Nabarangpur	77	96.3	16	20.0	10	12.5	0	0.0	2	2.5	80	100.0
Papadahandi	59	73.8	12	15.0	20	25.0	0	0.0	21	26.3	80	100.0
Umerkote	42	52.5	26	32.5	15	18.8	14	17.5	25	31.3	80	100.0
Total	268	67.0	85	21.3	77	19.3	15	3.8	117	29.3	400	100.0

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

It is also found that in Jharigaon Block 50 HHs (62.5 per cent) take millets recipes during morning, 17 HHs (21.3 per cent) take during lunch, 16 HHs (20 per cent) take during evening,

and not a single HH take during their dinner time. In the block as many as 29 HHs did not consume such recipes at all. It was revealed that as mnay as 40 HHs (50 per cent) in Kosagumuda Block take millets recipes during the morning, 14 HHS (17.5 per cent) during lunch, 16 HHs (20 per cent) during evening, 1 HH (1.3 per cent) during dinner and another 40 HHs did not comsume such recipes at all. Likewise, in Nabarangpur Block it was found that 77 HHs (96.3 per cent) are taking millets based recipes even during the morning, 16 HHs (20 per cent) take during lunch, 10 HHs (12.5 per cent) take during evening, nobody during the dinner and another 2 HHs (2.5 per cent) did not take the millets based recipes at all. In Papadahandi Block it was found that in Papadahandi Block 59 HHs (73.8 per cent) take millets recipes during the morning, 12 HHS (15 per cent) during lunch, 20 HHs (25 per cent) during evening, nonody during dinner and another 2 HHs (2.5 per cent) did not comsume such recipes at all. Likewise, in Umerkote Block as many as 42 HHs (67 per cent) take millets recipes during the morning, 26 HHS (32.5 per cent) during lunch, 15 HHs (18.8 per cent) during evening, 14 HH (17.5 per cent) during dinner and another 25 HHs did not comsume such recipes at all.

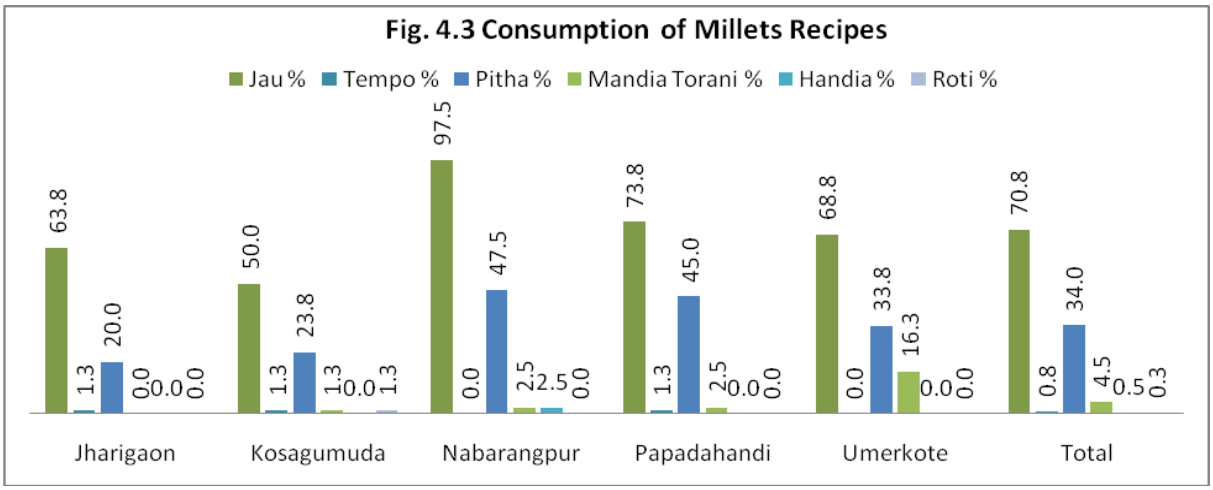
4.4 Consumption of Various Millets Based Recipes by the Respondent HHs

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 Koraput District including Nabarangpur 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 2018-19 (Table 4.3 and Fig.4.3), in Nabarangpur District across the five Blocks the local communities are consuming millets in different recipes such as in the form of *Jau* as far as 283 HHs (70.8 per cent), 3 HHs (0.8 per cent) as *Tempo*, 136 HHs as Cake (34 per cent), 18 HHs (4.5 per cent) as *Mandia Torani*, 2 HHs (0.5 per cent) as *Handia* – Country Liquor , and another 1 HH take in the form of *Roti* (0.3 per cent).

As per the findings of the Survey, in Nabarangpur District across the five Blocks the local communities are consuming millets in different recipes such as in the form of *Jau* by 283 HHs (70.8 per cent), 3 HHs (0.8 per cent) as *Tempo*, 136 HHs as Cake (34 per cent), 18 HHs (4.5 per cent) as *Mandia Torani*, 2 HHs (0.5 per cent) as *Handia* – Country Liquor , and another 1 HH take in the form of *Roti* (0.3 per cent). As per the findings of the Survey, in Jharigaon Block the

local communities are consuming millets in the form of *Jau* by 51 HHs (63.8 per cent), 1HH (1.3 per cent) as *Tempo*, 16 HHs as Cake (20 per cent), and not a single HH is taking *Mandia Torani*, *Handia* – Country Liquor , or *Roti*. In Kosagumuda Block the local communities are consuming millets in different recipes including in the form of *Jau* as many as 40 HHs (50 per cent), 1 HH (1.3 per cent) as *Tempo*, 19 HHs as Cake (23.8 per cent), 1 HH (1.3 per cent) as *Mandia Torani*, and another 1 HHs (1.3 per cent) as *Handia* – Country Liquor, and another 1 HH take in the form of *Roti* (1.3 per cent). As per the findings of the Survey, in Nabarangpur Block the local communities are consuming millets in different recipes in the form of *Jau* as many as 78 HHs (97.5 per cent), no body taking *Tempo*, 38 HHs as Cake (47.5 per cent), 2 HHs (2.5 per cent) as *Mandia Torani*, 2 HHs (2.5 per cent) as *Handia* – Country Liquor , and nobody is taking *Roti*.

Ii was also found that in Papadahandi Block the local communities are consuming millets in different recipes in the form of *Jau* as many as 59 HHs (73.8 per cent), I HH is taking *Tempo*, 136 HHs as Cake (45 per cent), 2 HHs (2.5 per cent) as *Mandia Torani*, and not a single HH is taking *Handia* – Country Liquor , and *Roti*. In Umerkote Block the local communities are consuming millets in different recipes such as *Jau* as many as 55 HHs (68.8 per cent), no body taking *Tempo*, 27 HHs as Cake (33.8 per cent), 13 HHs (16.3 per cent) as *Mandia Torani*, and not a single HH is taking *Handia* – Country Liquor, or even taking Mandia *Roti* (Table 4.3 and Fig.4.3).



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

Table 4.3: Consumption of Millets Recipes

Blocks	No. of Respondent HHs	Jau		Tempo		Pitha		Mandia Torani		Handia		Roti		Total HHs consumed	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Jharigaon	80	51	63.8	1	1.3	16	20.0	0	0.0	0	0.0	0	0.0	51	63.8
Kosagumuda	80	40	50.0	1	1.3	19	23.8	1	1.3	0	0.0	1	1.3	40	50.0
Nabarangpur	80	78	97.5	0	0.0	38	47.5	2	2.5	2	2.5	0	0.0	78	97.5
Papadahandi	80	59	73.8	1	1.3	36	45.0	2	2.5	0	0.0	0	0.0	59	73.8
Umerkote	80	55	68.8	0	0.0	27	33.8	13	16.3	0	0.0	0	0.0	55	68.8
Total	400	283	70.8	3	0.8	136	34.0	18	4.5	2	0.5	1	0.3	283	70.8

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

4.5 Conclusion

The millets farming HHs consume more and more millets based recipes during the Summer Season (70.8 per cent), especially during breakfast to keep them fit and strong to work hard and save them from Sun in comparision to the Rainy Season (56.3 per cent) or during the Winter Season (38.3 per cent). In adition 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* (70.8 per cent), Cake (34 per cent), *Tampo* (0.8 per cent), *Mandia Torani* (4.5 per cent), *Handia* (0.5 per cent) and *Roti* (0.3 per cent) across the five Blocks in Nabarangpur District.

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

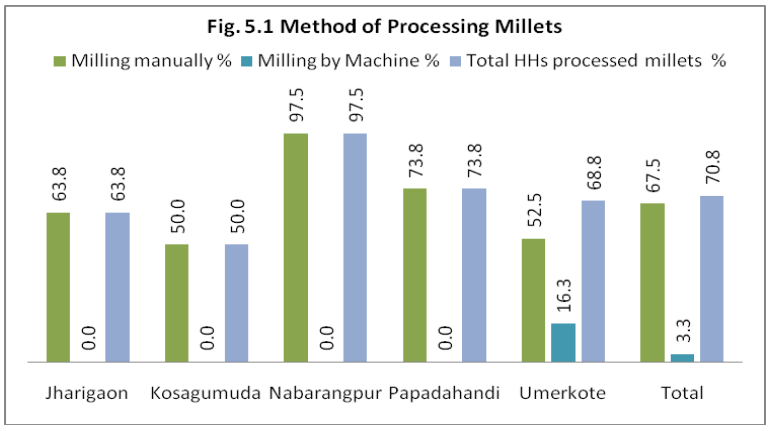
5
PROCESSING AND MARKETING

5.1 Introduction

Marketing millets as well as all millets based products largely depends on the extent of millets being produced in the locality and other accessible places in the State. Based on the findings and analysis of the Baseline Survey 2018-19 held in Nabarangpur District across the five Blocks consisting of the Jharigaon Block, Nabarangpur Block, Kosagumuda Block, Papadahandi Block and Umerkote Block, this chapter discusses the various methods being adopted by the millets farming and non-millets farming HH respondents. There may be some respondent HHs who might not be farming millets but consuming, involved in its processing. Local availability and the distance being covered by the HHs to reach the processing and milling units may also be an issue that needs to be analyzed. The chapter also discusses the various modes of marketing as well as its trend.

5.2 Processing of Millets

After cultivation and harvesting, processing of millets is an essential as well as an important activity for the farmer HHs to make the produce ready for use or even get it ready for selling in the local or in the distant market in due price. As shred to the investigator during the Baseline Survey, while selling the millets based produces the farmers in the locality try to have more profit. As observed during the Baseline Survey 2018-19 in Nabarangpur District across the five Blocks, usually two types of processing are taking place at the village level by the farming HHs, one is it happens manually by using the locally available *Chaki* or crusher and the other one is through machines.



In Nabarangpur District, across the five Blocks (Table 5.1 & Fig. 5.1) as it is observed, out of the total 400 respondent HHs, 283 HHs have shared about their mode of processing millets. As found, across the five Blocks 270 HHs (67.5 per cent) are doing it manually by using the locally available *Chaki*/ Stone Crusher, 13 HHs (3.3 per cent) by using machine, and not a single HH revealed that they are doing both the methods as and when required according to their convenience. To be specific, in Jharigaon Block out of the total respondents, 51 HHs (63.8 per cent) are found to be milling or crushing it manually, and not a single HH is doing it by machine.

Table 5.1: Method of Processing Millets

Blocks	No. of Respondent HHs	Milling manually		Milling by Machine		Total HHs processed millets	
		No.	%	No.	%	No.	%
Jharigaon	80	51	63.8	0	0.0	51	63.8
Kosagumuda	80	40	50.0	0	0.0	40	50.0
Nabarangpur	80	78	97.5	0	0.0	78	97.5
Papadahandi	80	59	73.8	0	0.0	59	73.8
Umerkote	80	42	52.5	13	16.3	55	68.8
Total	400	270	67.5	13	3.3	283	70.8

Source: Field Survey

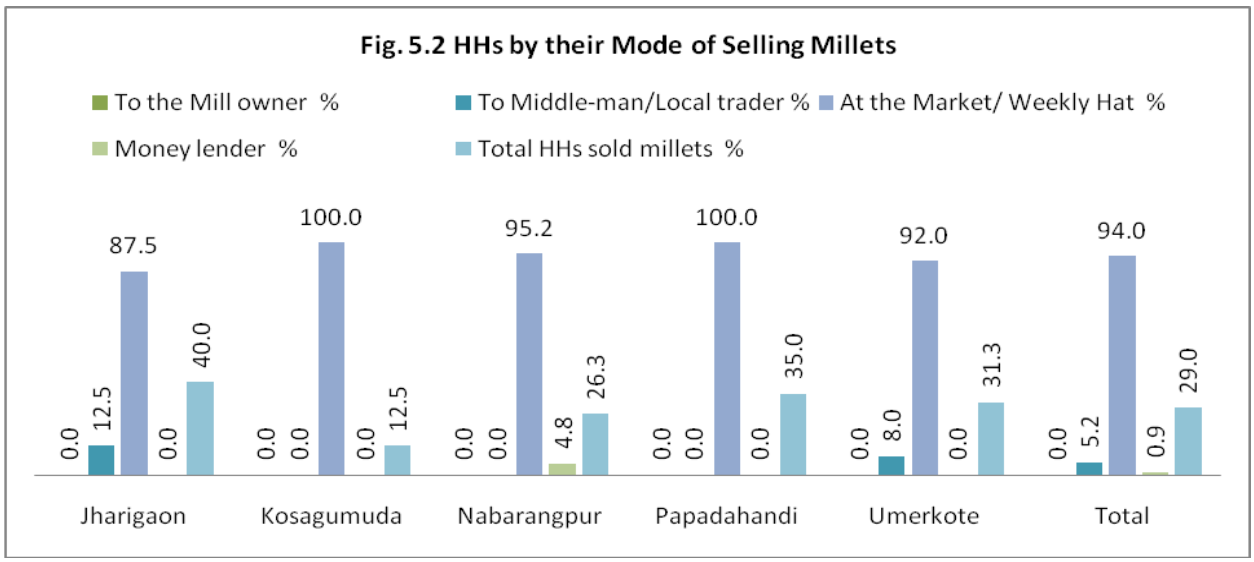
In Kosagumuda Block it was observed that as many as 40 HHs (50 per cent) are doing it manually, and not a single HH was found to be doing it by using the available machine. In Nabarangpur Block as many as 78 HHs (97.5 per cent) are doing the milling manually, and not a single HH are using the available machines. In Papadahandi Block as many as 59 HHs (73.8 per cent) are doing it manually, and not a single HH is doing by machines. In Umerkote Block it was also found that as many as 42 HHs (52.5 per cent) are doing it manually, and 13 HHs (3.3 per cent) are milling their millets by using the available machines in the locality.

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 then 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, marking millets is important for the respondent farmer households. As shared by the millet farming respondents HHs (Table 5.3 and Fig. 5.3) in Nabarangpur District across the five Blocks it was revealed that nobody has sold their millet produce to the mill owner. However, out of the total 6 HHs (5.2 per cent) sold their millets to the Middleman/ Local Trader. In addition to that it was found that across the five Blocks in the District 109 HHs (94 per cent) sold millets at the Weekly Hat/ Local Market. It was also found that only 1 HH (0.9 per cent) sold to the Money Lender. Overall, across the five Blocks in the District among the respondent HHs it was observed that total 116 HHs sold their millets.



To be specific, as observed in the Baseline Survey 2018-19 in case of the Jharigaon Block out of the total respondent HHs, 4 HHs (12.5 per cent) sold their millets to the Local Trader or the Middle Man, 28 HHs (87.5 per cent) sold their millets in the local Weekly Hat/ Local Market, nobody sold to the Money Lender and to the Govt. through the local Mandi. In case of Kosagumuda Block no body sold millets to the Local Trader or the Middle Man or the Money Lender, 10 HHs (100 per cent) sold in the local Weekly Hat. In Nabarangpur Block it

was found that as many as 20 HHs (95.2 per cent) sold millets at the Weekly Hat/ Local Market and only one HH has sold his millets to the Money Lender. In Papadahandi Block it was found that as many as 28 HHs (100 per cent) sold their millets at the Weekly Hat/ Local Market. In Umerkote Block it was also observed that out of the total respondents HHs, 2 HHs (8 per cent) sold to either the Local Trader or the Middle Man, 23 HHs (92 per cent) sold in the local Weekly Hat/ Market and only one HH has sold to the Money Lender and not a single HH has sold to the Government at the Local Mandi.

Table 5.2: Households by their Selling Millets across blocks

Blocks	No. of Respondent HHs	To the Mill Owner		To Middle-man/ Local trader		At the Market/ Weekly Hat		Money lender		Total HHs sold Millets	
		No	%	No	%	No	%	No	%	No	%
Jharigaon	80	0	0.0	4	12.5	28	87.5	0	0.0	32	40.0
Kosagumuda	80	0	0.0	0	0.0	10	100.0	0	0.0	10	12.5
Nabarangpur	80	0	0.0	0	0.0	20	95.2	1	4.8	21	26.3
Papadahandi	80	0	0.0	0	0.0	28	100.0	0	0.0	28	35.0
Umerkote	80	0	0.0	2	8.0	23	92.0	0	0.0	25	31.3
Total	400	0	0.0	6	5.2	109	94.0	1	0.9	116	29.0

Source: Field Survey

Note: The row totals are not additions across mode of selling millets, as a household can sell in multiple ways. Percentage figures have shown to the respective HHs total

5.4 Conclusion

During the Baseline Survey 2018-19 it was found that in Nabarangpur District, across the five Blocks, not a single respondent HH sold their millet produce to the mill owner, 109 HHs (94 per cent) sold it either at the Weekly Hat or local Market, 6 HHs (5.2 percent) to the Local Trader or the Middle Man, however, it was la sop found that only one HH (0.9 per cent) sold to the Money Lender. Across the five Blocks it was also revealed that not a single HHs has sold their millet to the Govt. at the local Mandi.

6
MAJOR FINDINGS

6.1 As revealed in the Baseline Survey, in Nabarangpur District, across the five surveyed Blocks especially in Nabarangpur Block out of the total 80 respondent HHs 62 HHs (47.1 per cent) that is the highest are engaged in millets cultivation.

6.2 Across the five Blocks in the District, it is also revealed the as many as 72 HHs (90 per cent) in Umerkote Block are the highest numbers of Scheduled Tribe population among all the respondent HHs are found to be cultivating millets. In the district across the Blocks an average 75.3 per cent of the ST HHs is producing millets.

6.2 It was found in the Survey that across the five Blocks among the respondent HHs, 141 HHs (62.1 per cent) are doing the LS & LT methods of sowing while cultivating Millets. It was also found that across the five blocks, while cultivating *Ragi* by the 141 HHs (62 per cent) are adopting LS/ LT. Whereas just one HH (100 per cent) is cultivating Suan across the Blocks.

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. 226 HHs (56.5 per cent) respondents shared that they their own seed is of good quality, 173 HHs (43.3 per cent) said it is of average quality and only one HH (0.3 per cent) shared that it is of bad quality.
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6.5 The Baseline Survey conducted across the five Blocks in the District reveals that out of the total 400 HHs Surveyed, 240 respondent households are cultivating *Ragi* covering 57.2 hectors with a production of 232.3 quintals and another only one HH is cultivating *Suan* in 0.2 hectors of land with a production of 1 quintal.

6.6 In Nabarangpur District across the five Blocks, it was also revealed that per hector production (yield) of *Ragi* is 4.1 quintals, which is found to be much higher in case of *Suan* i.e. 4.9 quintals per hector.

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 (21.3 per cent), dinner (29.3 per cent) or evening time (3.8 per cent), mostly during the morning time (67 per cent) are taking millets based recipes.

6.8 Across the five Blocks, it was also found that as many as 70.8 per cent respondent HHs are taking during the Summer Season, which is 56.3 per cent) in Rainy Season and 38.3 per cent 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 Nabarangpur District that as many as 67.5 per cent of the millets framing HHs have been milling it manually by using local traditional tools and it is happening throughout the year. And only 3.3 percent of the respondents HHs are milling it by machine in their leisure.

6.10 In the Baseline Survey it was revealed that each year most of the millets farming respondent HHs (94 per cent) sell at the Weekly Hat, it is followed by another 5.2 per cent HHs selling to the Local Trader/ Middle man, and only one HH (0.9 per cent) selling to the Money lender as an obligation.

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 *Annexure – 1*

ON

SPECIAL PROGRAMME FOR PROMOTION OF MILLETS IN TRIBAL AREAS OF ODISHA

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 Pestisides: 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 (appox.)	

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)	
Kharif		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										
Rabi	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

Phase III Base line Study *Annexure - 2*

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

Participant's name	Age	Sex	Education	Job	Notes
1.					
2.					
3.					
4.					
5.					

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? (Consume food during 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 nutritional benefits of millets?