



TARINA Baseline Study for Interventions (TBSI)



CARE India Solutions for Sustainable Development



Acknowledgement

TBSI study has been conducted under Technical Assistance and Research for Indian Nutrition and Agriculture (TARINA¹) initiative of CARE India led by the Tata Cornell Institute for Agriculture and Nutrition (TCI). Our special thanks to the consultant (Kantar Public Private Limited, a unit of IMRB, New Delhi) for this study which has gathered all the desired information from the field and helped the project preparing this report.

We would like to record our appreciation for all community members spread across 72 villages of G.Udaygiri & Tikabali blocks in Kandhamal district and Narla, Bhawanipatana & Junagarh Blocks in Kalahandi district for their active support and cooperation during the process of field study in spite of their busy schedule and pressing engagement. The valuable time spared by them and their hospitality and cordiality accorded to our field staff during their visit is also appreciated.

We are grateful to the community members, SHG members, Community Resource Persons of CARE-India, Key Informants of villages under this study for their full support in terms of articulating the perspectives of the study team and sharing required information for use in the report preparation. Special thanks for their unconditional support in this regard.

All partners have played very important and constructive role during field study by way of discussion on various key issues during personal interviews. They deserve special acknowledgement for making themselves available.

Sincere thanks to TARINA Senior Project level team at districts as well as at Bhubaneswar such as Deputy Director, TARINA, KMLE, ANE and CBO, and MEOs for their unflinching support and mentioning throughout the courses of this study.

¹CARE India is implementing the Technical Assistance and Research for Indian Nutrition and Agriculture (TARINA) initiative in India, as a member of a consortium being led by Cornell University. Other consortium members include BAIF, Emory University, Grameen Development Services, International Food Policy and Research Institute (IFPRI), the Tata Trusts, and Tata Cornell Initiative. This project aims to improve access and availability for poor and marginal smallholders to year-round affordable, diverse and quality foods in order to achieve positive nutrition outcomes



Executive Summary

After the Green Revolution in India the country could make available food sufficiency and the agricultural lands are dedicated to the staple grains wheat, rice and maize. But the conversion of diverse farmland into monoculture fields has come at the expense of micronutrient-rich crops, leaving much of the rural population chronically malnourished despite growing abundance in their midst². With an objective to boost the nutrition outcome at individual and women small holder household level in India, the Bill and Melinda Gates Foundation (BMGF) awarded grant to the Tata-Cornell Institute for Agriculture and Nutrition (TCI). TCI launched Technical Assistance and Research for Indian Nutrition and Agriculture (TARINA) in 2013 as a research initiative to develop solutions in a country where childhood stunting and anemia in women threaten long-term health and .

1. Provide technical assistance to make agricultural projects nutrition sensitive
2. Provide an evidence-driven pathway to policy reforms that promote availability and affordability of a more nutritious food system
3. Leadership and capacity increased to institutionalize nutrition sensitive agriculture in India

In Odisha, CARE India, a national level development organization, has been entrusted as an implementation partner for the TARINA project activities across 72 villages of the two districts of Kandhamal and Kalahandi.

As part of the project design, it has been planned to undertake a comprehensive intervention specific baseline study for establishing benchmarks, where concerned key components of the project could be measured to comprehend the outcomes and impacts that is committed in the project's result framework. The design of the baseline study has been planned in two parts viz. TARINA Baseline Study (TBS) and TARINA Baseline Study for Interventions (TBSI). The TBS was undertaken by TCI while CARE India as an implementation partner was entrusted to implement TBSI to observe the changes among impact population due to each intervention with following research objectives;

Research objectives

1. To create an intervention specific base values in the project areas among Impact Population (IP)
2. To collect and analyse the relevant information on key interventions as per the desired indicators outlined in the KMLE framework
3. To analyse the collected intervention specific baseline data in correlation with socio-economic and demographic profile of household and individual for creating the value of pre-designed benchmark indicators

² <http://news.cornell.edu/stories/2015/12/134-million-grant-will-help-combat-malnutrition-india>



4. To give the recommendations on program interventions and implementation strategies based on the study findings, project goal and result, framework

The research design adopted in the TBSI was pre-post research design. As a part of data collection, mixed method technique (involving both quantitative and qualitative methods of the data collection) was used. The quantitative data collection consisted of face to face household interviews with the beneficiaries by using structured questionnaires. The mode of interviewing was CAPI (Computer Assisted Personal Interviewing). As a part of the qualitative component, In-Depth Interviews (IDIs) and Focus Group Discussions (FGDs) were done by the trained moderators and the proceedings were audio-recorded. At an overall level, the total sample size for the study was 1050, equally spread across each of the seven interventions (because two interventions are cross cutting). The sample size estimation was done to measure the 15% changes in the key indicators and was arrived at by assuming a high precision (80%) and confidence level (90%).

Out of total 1050 households were approached for the data collection in the project intervention villages of two districts of Odisha - Kalahandi and Kandhamal. While in Kalahandi, we conducted interviews in 552 households, in Kandhamal, interviews were done in 498 households. In each of the selected household, a beneficiary belonging to one of the seven interventions was interviewed. Primarily, the information presented in the continuing paragraphs includes respondent's characteristics (gender, age, marital status and education attainment), the social category of the households (including the religion and the caste) and the housing characteristics (type of household, ownership, information about the drinking water and sanitation sources, dietary patterns of household etc.).

All the beneficiaries interviewed during the study were females. The mean age of the respondents, upon calculations, came out to be 41 years. More than one-fourth of the respondents also belonged to age groups of 35-44 years (27.5%) and 25-34 years (25.9%). Analysis of the data as per the district (Kalahandi and Kandhamal) also indicated similar trends and no major deviation in the respondent age was observed between the two districts. Most of the interviewed respondents (92.1%) were reportedly 'currently married'. At an overall level, close to nine out of ten households (85.8%) reported agricultural land ownership. In the two sampled districts, the ownership of agricultural land was more among the respondents from Kalahandi where more than nine out of ten respondent's household owned agricultural land (92.9%). Comparatively, in Kandhamal this proportion was a little more than three-fourth households (77.9%).



Kitchen Garden: The mean area per household in which kitchen gardening was being done for vegetables came out to be 0.08 acres (S.D = ± 0.11) whereas the mean was 0.05 acres (S.D = ± 0.07) for fruits. The average monthly production of vegetables from kitchen garden per household was also comparatively more than fruits (vegetables: 16.7 kg; fruits: 4.5 kg). Round the year production in kitchen garden was not observed and the mean number of months in the last year during which the respondents grew fruits and vegetables in their kitchen garden came out to be 4.3 (S.D = ± 2.9). Majority of the respondents (70.7%) reported to be using improved production practices in their kitchen garden. At an overall level, one fourth (25.3%) respondents mentioned that the Farmer Field School (FFS) sessions have helped them in identifying and prioritizing critical intervention components. More than four out of ten (42.0%) respondents mentioned that kitchen garden related FFS sessions focused on women related issues. At an overall level, more than two-third of the respondents (67.3%) reported that discussion among men and women about differential access to food had happened in their household. An involvement of both male and female members in kitchen gardening was commonly observed across project location. Overall, almost four out of ten respondents (38.7%) had aggregated demand for kitchen garden related inputs with other women or SHGs. Almost three out of ten respondents (29.3%) had aggregated and purchased inputs for kitchen garden and similarly, three out of ten respondents (27.3%) indicated aggregating their sale with other women or SHGs. Promoting an utilisation of farm waste and waste from kitchen garden was mentioned by more than four (42.7%) out of ten respondents. Less than four out of ten (39.3%) respondents were aware about the institutes which were specifically supporting the different components of kitchen garden. Knowledge about government schemes supporting Kitchen Garden among the households was observed to be low and less than one-fifth respondents (19.3%) were aware about any such government schemes.

Goatery: It is found that on an average, per household, the respondents had three female adult goats while the current ownership of the male adult goats and kid goats (up to six months of age) was less and was two. Vaccination of the goats is of paramount importance ensuring a reduced morbidity and mortality, it is related to their overall well-being. More than two-third respondents (65.3%) reportedly were involved in regular vaccination of goats. The practice of regular vaccination was primarily limited to adult goats (male/female) and the kids were not very frequently vaccinated. The mean number of times when the goats were vaccinated per year came out to be two (S.D = ± 0.9). The key sources of goat vaccination were – 'Directorate of Animal Husbandry and Veterinary' (62.2%) and 'para veterinary / vaccinators' (34.7%).

At an overall level, almost two out of ten (17.3%) respondents mentioned that the Farmer Field School (FFS) sessions have helped them in identifying and prioritizing critical intervention components. More than one third of the respondents (36.4%) said that they had shared these discussion in their FFS session with other households. At an overall level, three out of ten (30.7%) respondents mentioned that goatery related FFS sessions focused on women related issues.

The role of women SHGs in allocating identified work between themselves and to their women team members regarding goatery, at an overall level, was mentioned by almost three out of ten respondents (28.0%). One-third respondents indicated that the SHGs had a right to decide about including or



excluding the positive or negative deviant behaviour by fellow SHGs/SHG members (33.3%) and by men (32.7%). At an overall level, about three out of ten respondents (29.3%) reported that discussion among men and women about differential access to goat meat had happened in their household. Among such respondents, about two third have addressed portioning the meat at the start (65.9%), about three out of ten reported allowing women to eat with men (29.5%) and less than one out of ten reportedly allowed women to eat before men (4.5%).

Overall, two out of ten respondents (23.3%) had aggregated demand for goatery related inputs with other women or SHGs. Less than two out of ten respondents (16.0%) had aggregated and purchased inputs for goatery and similar percentages (16.7%) indicated aggregating their goats with other women or SHGs. One-fourth respondents (24.7%) mentioned that women were being included in deciding the parameters for fodder demonstrations. Allocation of fodder demonstrations to farmers from different social strata/communities was also reported by close to one-fifth respondents (18.0%). About one-fifth (22.7%) respondents were aware about the institutes which were specifically supporting the different components of goat rearing. Seven out of ten respondents (70.6%) mentioned that input of meetings with such institutions and their experts have been shared with them. Knowledge about government schemes supporting goatery among the households was observed to be low and around one out of ten respondents (14.0%) were aware about any such government schemes.

Poultry: The mean number of years since when the respondents were involved in poultry came out as five. 'Desi' breed of poultry birds was most commonly owned by the respondents. Close to half of the respondents mentioned their unawareness about the name of the type/breed of the bird owned by them. On an average, single breed of the bird was owned by the respondents. The following grid denotes the several types of poultry birds which were available at the respondent's poultry farm/backyard. As could be seen, primarily, the birds were 'laying hen' (82.0%) and 'chicks' (74.0%). Close to two-third respondents also mentioned the presence of 'cocks' (62.0%) in their poultry farms. On an average, the respondents had six chicks, three laying hens, three pullets and two cocks in their poultry farm. The commonality of spreading message or training the beneficiaries on the benefits of consuming animal protein was low and less than 5% respondent mentioned about receiving such trainings. Majority of the respondents believed that meat is more important for home consumption than eggs. The corresponding percentages were 58% for meat and 26.7% for eggs. On an average, the average household level consumption of meat was four times in a month while the corresponding consumption level for eggs was seven times in a month. In these households, the meat dishes/eggs were first served to elderly members and it was followed by the serving to adults in the age group of 18 to 59 years. When asked about the equitable distribution of quantity of meat/egg in the household, respondents either quoted frequency as 'occasionally' (51.2%) or 'most of the times' (43.3%).

The ones who indicated seasonality, reported that egg is mainly consumed in their households either during autumn season (August to October) [38.7%] or winter season (November to January) [37.1%]. Similar to the reported trends for the egg consumption, an existence of seasonality in meat consumption was reported by low proportion of respondents (25.2%). At an overall level, the most frequent consumption of meat (moderate to very high) was reported during winter season (68.9%) followed by autumn season (53.5%).



One-third beneficiaries (33.3%) were providing supplementary feeding to backyard poultry. At an overall level, more than three-fourth such respondents (78%) knew about the economic feed formulation for the poultry birds. Giving finisher ration to the poultry birds before marketing to fetch a better price was being followed by less than two out of ten households (17.3%).

Dairy: It is a key livelihood and risk mitigation strategy for small and marginal farmers. Rearing Dairy animals helps beneficiaries economically and supplies them food throughout the year. The small-scale dairy farming is a viable option in the rural area and contributes to livelihood. Cow is our asset to local population as this contributes significantly to food security, poverty alleviation and promotion of gender equality.

The mean number of years since when the respondents were involved in dairy farming was ten years. On an average, the beneficiaries owned four dairy livestock (cattle/buffalo). The ownership was primarily of the cows and very low percentage of the beneficiaries reported an ownership of buffalo. When asked about the different breeds of the cow, mostly the respondents mentioned owning 'Desi' (36%) and 'Jersey' (18.7%). Majority of the cows owned by the respondents were of pure breed (Desi pure breed: 93.5%; Jersey pure breed: 58.9%). Low proportion of respondents mentioned owning cross breed cows (Desi cross breed: 4.1%). When asked about the type of the cows, the respondents mainly mentioned it to be 'lactating cow/dairy cow' and 'dry cow'.

The average quantity of milk being produced by a cow or a buffalo during lactation, the average per cow came out to be 1.49 liters. Data indicated that mostly the produced cow's milk was being used for domestic household consumption rather than for the selling purpose [mean quantity of milk (household consumption) = 1.14 liters; mean quantity of milk (selling) = 0.71 liters]. The average milk production per buffalo was reported to be 0.44 liters. In contrast to the milk production for cow, mostly the respondents were involved into sale of buffalo's milk and the average quantity of buffalo's milk (for selling purpose) was 1.29 liters as compared to the average quantity of buffalo's milk for household consumption (0.60 liters). At an overall level, one out of ten respondents (12.0%) believed that the Farmer Field School (FFS) sessions on dairy farming have helped them identify and prioritize critical intervention components. Awareness about the government schemes supporting the components of dairy remained low among the respondents and at an overall level, less than one out of ten respondents (8.0%) were aware about it.

Crop Diversification: Crop diversification refers to the addition of new crops replacing steps cropping systems to influence agriculture production on a farm considering the different returns from value added crops with complimentary marketing opportunities. Crop diversification is intended to give a wider choice in the production of variety of crops in each area to expand the production related activities on various crops and to lessen risk. To know the various crops being cultivated by the beneficiary households it is found that more than three-fourth beneficiaries (75.3%) reported being involved in the cultivation of rice. This was followed by the proportions who were involved in cultivation of gram (64.0%), vegetables (59.3%) and pulses (58.7%). A high proportion of respondents (81.3%) were aware about the nutritional values of pulses/ legumes or vegetable crops. More than eight out of ten beneficiaries (84.0%) were involved in growing of any one, any two or all of pulses/ legumes or vegetables by themselves.



At an overall level, close to four out of ten beneficiaries (38.0%) mentioned that they had received any training on the improved storage of pulses, grains and vegetable seeds. The topics covered in these trainings were reported to be 'sun-drying' (89.5%), 'limiting the moisture content in the crops' (84.2%), 'Proper ventilation in the storage area' (64.9%), 'Installation of storage stands/raised bed to avoid the storage of the produce on floor' (56.1%), 'Use of hermetic bags (GrainPro bags)' (47.4%). The respondent demonstrated a high level of protecting measures to restrict crop loss from stray livestock/animals. At an overall level, more than half (52.7%) respondents had a physical fencing in their crop area to protect entry of stray livestock/animal.

Among the respondents who used physical fencing as a measure to stop the entry of animals in the homestead garden, close to two third (62.0%) perceived it as effective. Guarding of the crop area by the family members was reportedly being done in more than two-third beneficiary households (64.7%).

The mean quantity of pulses consumed by the household members in a month was 6.5 kilograms. Respondents mentioned that for a major part of the year (on an average for seven months), the pulses/legumes/ vegetables being produced by them was sufficient for their family consumption. Majority of the beneficiaries (90%) expressed that they would like to expand the growing practice of pulses/legumes or vegetables in their farm land provided a support is received. The three key areas in which support was sought included 'availability of fertilizer/seeds' (80%), 'monetary support' (74.8%) and 'guidance on correct cultivation practices (40.7%)'.

Drudgery Reduction or Labour Saving Technology: People do many of the most difficult farm tasks in India which included weeding, harvesting and post-harvest processing of produce. These tasks are time consuming and full of drudgery. There are some improved implements and machinery which can help reduce drudgery and physical reduction. Majority of the households (90.7%) were reportedly using the agricultural tools or other improved devices in agriculture and allied activities. At an overall level, one-third (35.3%) respondents mentioned that the Farmer Field School (FFS) sessions have helped them in identifying and prioritizing critical intervention components. Four out of ten (40.0%) respondents reported that FFS sessions shared parameters to measure effectiveness. The role of women SHGs in allocating identified work between themselves and to their women team members regarding drudgery reduction, at an overall level, was mentioned by close to half of the respondents (47.3%).

Almost two-third of the respondents (64.7%) reported that discussion among men and women about better food utilisation had happened in their household. A difference was observed in the value of this indicator within the two districts. At an overall level, almost six out of ten (58.0%) respondents mentioned that farmers from different social strata/communities were given equal weightage in accessing services. More than four out of ten (42.7%) respondents mentioned that drudgery reduction related FFS sessions focused on women related issues.

More than one-fourth (26.0%) respondents were aware about the institutes which were specifically supporting the adoption and promotion of different drudgery related equipment. Knowledge about government schemes supporting labour saving technologies among the households was observed to be low and less than one-fifth respondents (17.3%) were aware about any such government schemes.



Post Harvest Management: Post harvesting management is the stage of crop production immediately following harvest including cutting, drying, grading, stacking, threshing, cleaning and packing of the produce. The various crops harvested by the beneficiaries during the most recent harvest, majority of the respondents had harvested rice (91.3%). This was followed by the vegetables (35.3%) and pulses (34.0).

Four out of ten beneficiaries were aware about the recommended moisture content of their crops. Half of such respondents were trained on the concept and the training was majorly imparted by CARE/TARINA project team (90.3%).

Less than one-fourth respondents (23.3%) knew about the concept of Fair Average Quality (FAQ) of pulses, grains and vegetable seeds. Majority of the ones (91.4%) who were aware about FAQs, were maintaining it. Close to three-fourth (71.4%) of the respondents who were aware about FAQs received a training on maintaining FAQs in pulses, grains and vegetable seeds.

The opinion of respondents regarding the effect of an improper PHM on the pricing, taste deterioration, food quality or nutrition was also captured. A negative impact of the improper PHM was observable on all the aspects viz. pricing, taste deterioration, food quality and nutrition. The associated trends were similar across both the districts.



Table of Content

Acknowledgement

Executive Summary.....

List of tables	11
List of figures	13
Chapter 1: Introduction.....	14
1. Background	14
1.1. Introduction	14
1.2. Research objectives	15
2. Research design and sampling.....	16
2.1. Research design	16
2.2. Geographical coverage	16
2.3. Sample size estimation	17
2.4. Sampling methodology.....	18
3. Project implementation and data collection	19
3.1. Training of Investigators	19
3.2. Pre-test.....	19
3.3. Quality Control Mechanism	20
Chapter 2: Socio Economic Characteristics	21
2.1. Respondent characteristic	22
2.2. Religion and social category of the households	22
2.3. Housing characteristics.....	25
2.4. Ownership of agricultural land	25
Chapter 3: Key Findings – Kitchen Garden/ Homestead Garden	4
Chapter 4: Key Findings – Goatery	4
Chapter 5: Key Findings – Poultry	4
Chapter 6: Key Findings – Dairy	4
Chapter 7: Key Findings – Crop Diversification with Pulses/Legumes/Vegetables	4
Chapter 8: Key Findings – Drudgery reduction/ Labour Saving Technologies	4
Chapter 9: Key Findings – Post Harvest Management	4
Chapter 10: Key Findings – Household characteristics	4



List of Tables

<i>Table 1</i>	<i>List of interventions.....</i>	<i>15</i>
<i>Table 2</i>	<i>Sample size for quantitative component</i>	<i>17</i>
<i>Table 3:</i>	<i>Sample size for qualitative component</i>	<i>18</i>
<i>Table 4</i>	<i>Quality control mechanism.....</i>	<i>20</i>
<i>Table 5</i>	<i>Respondent’s education.....</i>	<i>22</i>
<i>Table 6</i>	<i>Social category of the households</i>	<i>22</i>
<i>Table 7</i>	<i>Household ownership</i>	<i>24</i>
<i>Table 8</i>	<i>Improved production practices in KG/ HG</i>	<i>27</i>
<i>Table 9</i>	<i>Types of improved production practices in KG/HG (%)</i>	<i>27</i>
<i>Table 10</i>	<i>Effectiveness of KG/HG Fencing</i>	<i>28</i>
<i>Table 11</i>	<i>Season in which KG/HG or its harvest is mostly affected by stray animals/livestock</i>	<i>29</i>
<i>Table 12</i>	<i>Month wise frequency of producing from kitchen garden (%)</i>	<i>29</i>
<i>Table 13</i>	<i>Fruit/crop/vegetable grown in the kitchen garden</i>	<i>30</i>
<i>Table 14</i>	<i>Visit to open lab demonstrations for seeing and learning about the KG/HG</i>	<i>31</i>
<i>Table 15</i>	<i>Seasons when the goats are vaccinated.....</i>	<i>334</i>
<i>Table 16</i>	<i>Material used in the goat shed</i>	<i>35</i>
<i>Table 17</i>	<i>Received training on goat rearing.....</i>	<i>36</i>
<i>Table 18</i>	<i>Use of different women friendly technologies.....</i>	<i>37</i>
<i>Table 19</i>	<i>Visit to open lab demonstrations for seeing and learning about goatery.....</i>	<i>37</i>
<i>Table 20</i>	<i>Several types of birds available at the poultry farm/ backyard.....</i>	<i>39</i>
<i>Table 21</i>	<i>Material used in the poultry shed/ poultry house</i>	<i>40</i>
<i>Table 22</i>	<i>Received training on poultry rearing</i>	<i>41</i>
<i>Table 23</i>	<i>Received training on animal husbandry.....</i>	<i>43</i>
<i>Table 24</i>	<i>Different practices in dairy farming.....</i>	<i>44</i>
<i>Table 25</i>	<i>Knowledge and awareness about various dairy farming aspects</i>	<i>44</i>
<i>Table 26</i>	<i>Livestock mortality in the last five years.....</i>	<i>45</i>
<i>Table 27</i>	<i>Awareness about livestock insurance.....</i>	<i>45</i>
<i>Table 28</i>	<i>Awareness about livestock loans</i>	<i>45</i>
<i>Table 29</i>	<i>Cultivation of the crops by the beneficiary households.....</i>	<i>46</i>
<i>Table 30</i>	<i>Key challenges in cultivation of crops</i>	<i>47</i>
<i>Table 31</i>	<i>Awareness about different cultivation practices</i>	<i>47</i>
<i>Table 32</i>	<i>Received training on package of practices (POPs).....</i>	<i>48</i>
<i>Table 33</i>	<i>Use of various agricultural tools</i>	<i>50</i>
<i>Table 34</i>	<i>Change in agricultural productivity due to the use of tools</i>	<i>51</i>
<i>Table 35</i>	<i>Received training on operation and maintenance of labour saving implement</i>	<i>51</i>
<i>Table 36</i>	<i>Visit to open lab demonstrations for seeing and learning about drudgery reduction</i>	<i>52</i>
<i>Table 37</i>	<i>Different crops harvested by the beneficiaries.....</i>	<i>55</i>
<i>Table 38</i>	<i>Practices being used in the Post-Harvest Management</i>	<i>55</i>
<i>Table 39</i>	<i>Awareness about various techniques of Post-Harvest Management</i>	<i>56</i>





<i>Table 40</i>	<i>Effect on improper PHM on pricing, taste deterioration, food quality and nutrition.....</i>	<i>57</i>
<i>Table 41</i>	<i>Serving of the food to the household members.....</i>	<i>61</i>
<i>Table 42</i>	<i>Women involvement in the labour force and association in the local community groups.....</i>	<i>62</i>
<i>Table 43</i>	<i>Association with a community group.....</i>	<i>63</i>
<i>Table 44</i>	<i>Handwashing with soap.....</i>	<i>64</i>
<i>Table 45</i>	<i>Instances of a day during which respondents typically wash their hands.....</i>	<i>64</i>
<i>Table 46</i>	<i>Access to a toilet facility.....</i>	<i>65</i>
<i>Table 47</i>	<i>Reasons why people defecate in open.....</i>	<i>65</i>



List of Figures

Figure 1	Geographical coverage	16
Figure 2	Sample size estimation formula.....	17
Figure 3	Training of the teams.....	19
Figure 4	Age group of respondents	21
Figure 5	Type of house.....	23
Figure 6	Households using an improved source of drinking water (%).....	24
Figure 7	Households owning agricultural land (%)	25
Figure 8	Contribution in kitchen gardening (%).....	26
Figure 9	Physical fencing in KG/HG (%).....	28
Figure 10	KG/HG getting affected by stray livestock/animal (%)	28
Figure 11	Goat shed (%).....	34
Figure 12	Health status of goats (%).....	35
Figure 13	Poultry shed (%).....	35
Figure 14	Health status of poultry birds (%).....	40
Figure 15	Health status of livestock (%).....	43
Figure 16	Livestock mortality in the last five years (%).....	44
Figure 17	Received training on improved storage (%).....	48
Figure 18	Physical fencing in crops (%).....	48
Figure 19	Use of tools (%)	50
Figure 20	Is time saved by use of agricultural implements (%).....	51
Figure 21	Received training on improved storage (%).....	56
Figure 22	Age distribution of HH members (%).....	59
Figure 23	HHs with a ration card (%).....	60



1. Background

1.1. Introduction

Over the past 50 years, the Green Revolution in India has helped transform the subcontinent's countryside into productive plots dedicated to the staple grains wheat, rice and maize. But the conversion of diverse farmland into monoculture fields has come at the expense of micronutrient-rich crops, leaving much of the rural population chronically malnourished despite growing abundance in their midst³. With an objective to boost the nutrition profile of agriculture in India, the Bill and Melinda Gates Foundation (BMGF) awarded grant to the Tata-Cornell Institute for Agriculture and Nutrition (TCI). TCI launched Technical Assistance and Research for Indian Nutrition and Agriculture (TARINA) in 2013 as a research initiative to develop solutions in a country where childhood stunting and anemia in women threaten long-term health and development.

Led by the TCI, TARINA links the evidence-generating capabilities of the International Food Policy Research Institute, the Tata Institute of Social Sciences, Emory University and Cornell with the implementation and technical capacity and experience of leading NGO partners BAIF and CARE. Primarily, the project focusses on achieving the goals by generating evidence and building the capacity of partner institutions to refocus agricultural policy for improved nutrition outcomes at both the national and state levels. The project also provides field-based, technical assistance for designing agricultural initiatives committed to delivering adequate food to local populations, primarily in the states of Bihar, Odisha and Uttar Pradesh.

The following are the key project objectives of TARINA:

- *Provide technical assistance to make agricultural projects nutrition sensitive*
- *Provide an evidence-driven pathway to policy reforms that promote availability and affordability of a more nutritious food system*
- *Leadership and capacity increased to institutionalize nutrition sensitive agriculture in India*

In Odisha, CARE India, a national level development organization, has been entrusted as an implementation partner for the TARINA project activities across 72 villages of the two districts of Kandhamal and Kalahandi. At the initial grounding of the project, a fact-finding study, known as Food Systems Diagnostic Study (FSDS) was conducted in the project areas to take stock of the state of art on Food-Nutrition connect among target populations. The FSDS led to identification of nine interventions (listed below) spanning over four years starting from November 2015:

³ <http://news.cornell.edu/stories/2015/12/134-million-grant-will-help-combat-malnutrition-india>



Table 1 List of the interventions

Specific interventions	Cross-cutting across all specific interventions
<ol style="list-style-type: none"> 1. Post paddy pulses cultivation 2. Homestead Garden 3. Poultry 4. Goatery 5. Dairy 6. Drudgery reduction/Labour saving technology 7. Post-harvest management 	<ol style="list-style-type: none"> 8. Behaviour Change Communication 9. Collective Strengthening

As part of the project design, it has been planned to undertake a comprehensive intervention specific baseline study for establishing benchmarks, where key components of the project could be measured to comprehend the impacts and outcomes that are committed in the project’s results framework. The design of the baseline study has been planned in two parts viz. TARINA Baseline Study (TBS) and TARINA Baseline Study for Interventions (TBSI). The TBS was undertaken by TCI while CARE India was adjudged as the implementation partner to conduct TBSI to observe the changes among impact population due to each intervention. CARE India engaged in a partnership with Kantar Public to undertake the data collection activities for TBSI in the selected villages of Odisha’s Kandhamal and Kalahandi districts.

1.2. Research objectives

The following were the specific objectives of the TBSI:

- *To create an intervention specific base values in the project areas among Impact Population (IP)*
- *To collect and analyse the relevant information on key interventions as per the desired indicators outlined in the KMLE framework*
- *To analyse the collected intervention specific baseline data in correlation with socio-economic and demographic profile of household and individual for creating the values of pre-designed benchmark indicators*
- *To give the recommendations on program interventions and implementation strategies based on the study findings, project goal and result framework*



2. Research design and sampling

2.1. Research design

The research design adopted during TBSI was **pre-post research design**. As a part of data collection, **mixed method technique (involving both quantitative and qualitative methods of the data collection)** was used. The quantitative data collection consisted of face to face household interviews with the beneficiaries by using structured questionnaires. The mode of interviewing was CAPI (Computer Assisted Personal Interviewing). As a part of the qualitative component, In-Depth Interviews (IDIs) and Focus Group Discussions (FGDs) were done by the trained moderators and the activities were audio-recorded.

2.2. Geographical coverage

TARINA project is being implemented across 72 villages of the Kandhamal and Kalahandi districts of Odisha. The implementation of TBS study (by TCI) guided the village selection and out of the 30 TBS villages where TBS was implemented, 19 were approached for the data collection during TBSI. Selection of the 19 villages was dependent on the beneficiary list provided by CARE team. All the project intervention villages which were not a part of TBS (non-TBS villages) were covered. Therefore, geographically, the coverage of the current study was limited to 61 project intervention villages – 19 TBS and 42 non-TBS. The list of all the villages approached for the data collection has been provided as an annexure.

Figure 1 Geographical coverage



2.3. Sample size estimation

2.3.1. Quantitative Component

The sample size selection was guided by the laid-out requirements of the CARE team. **At an overall level, the total sample size for the study was 1050, equally spread across each of the seven interventions.** The sample size estimation was done to measure 15% change in the key indicators and was arrived at by assuming a high precision (80%) and confidence level (90%).

The following formula was used for sample selection:

Figure 2 Sample size estimation formula

$$n = \frac{[Z_{1-\alpha}\sqrt{2P(1-P)} + Z_{1-\beta}\sqrt{P_1(1-P_1) + P_2(1-P_2)}]^2}{(P_2-P_1)^2} * D_{eff}$$

Where:

n = the sample size

P1= current rate (assumed to be at 50%)

P2 = expected level, assuming a 15% upward change

Z_{1-α}= Constant set according to the confidence level, for 90%, this value is 1.64

Z_{1-β}= Constant set according to the power of study, for 80%, this value is 0.84

D_{eff}= Design effect, this value has been taken as 1

The following table provides category wise total sample size covered, categorized among the two districts.

Table 2 Sample size for quantitative component

Districts	TBS			Non-TBS			
	Kitchen Garden/ Homestead garden	Goat Rearing	Drudgery reduction/ Labour saving technology	Poultry	Crop diversification into pulses/ legumes/ vegetables	Dairy	Post-harvest management
Kalahandi	74	84	60	78	99	93	64
Kandhamal	76	66	90	72	51	57	86
Total	150	150	150	150	150	150	150
	1050						

2.3.2. Qualitative Component

The following was the split of qualitative component across the different interventions. One IDI was undertaken in each of the study district for each of the component. Similarly, two FGDs were equally spread across the two districts – one in each of the district



Table 3: Sample size for qualitative component

<i>Districts</i>	<i>TBS</i>			<i>Non-TBS</i>			
	<i>Kitchen Garden/ Homestead garden</i>	<i>Goat Rearing</i>	<i>Drudgery reduction/ Labour saving technology</i>	<i>Poultry</i>	<i>Crop diversification into pulses/ legumes/ vegetables</i>	<i>Dairy</i>	<i>Post-harvest management</i>
IDI	2	2	2	2	2	2	2
FGD	2						

2.4. Sampling methodology

This study utilized a three-staged sampling methodology, as illustrated in the ensuing paragraphs:

Stage 1: Selection of the districts

The selection of districts was purposive in nature and was based on the geographical spread of the project.

Stage 2: Selection of the villages

As written earlier, the project design entailed the implementation of baseline in two components – TBS and TBSI. The village selection was guided by the geographical coverage of TBS and out of all the villages where TBS was implemented, 19 villages were purposively selected based on the beneficiary database provided by CARE. All the remaining villages where TARINA project is being implemented and which were not covered during TBS were also purposively selected.

Step 3: Selection of the respondents

In each of the selected villages, CARE team provided a beneficiary list. From this list, the selection of the target respondents was done by using systematic random sampling.



3. Project implementation and Data collection

3.1. Training of Investigators

Separate trainings were conducted for quantitative and qualitative components of the study. The quantitative comprised consisted of a three day training of investigators in which the participants were trained on technical skills and operational protocols of the survey. The qualitative training was a day long event at Kantar Public Bhubaneswar office before launch of the qualitative field work.

During the trainings, the field teams were given in-depth understanding on the study tools along with mock exercises. Details of the TARINA project, sampling methodology and ethical consideration were also an integral part of the trainings conducted. A detailed training agenda was prepared and followed during the training sessions and different members of the teams were elaborated about their roles and responsibilities as interviewers and supervisors. The details of the training sessions are as follows:

Figure 3 Training of the teams

S. No.	Component	Training Dates	Venue Details
1.	Quantitative	29 th August–1 st September 2017	Kantar Public, IMRB International, Nayapalli, Bhubaneswar, Odisha
2.	Qualitative	26 th September 2017	

3.2. Pre-test

A two-day pre-test exercise was undertaken on 27th August 2017 and 28th August 2017 in the project intervention areas of Kandhamal. Two villages (Adasuga and Dupepada) of Paburia GP in Tikabali block were approached for the pre-test. The mode of conducting the interviews during the pre-test was Computer Assisted Personal Interviewing (CAPI) and in total, our teams camp and 15 interviews covering at least two interviews of all the seven interventions.

One of the key objectives of the pre-test exercise was to get a direct feedback from respondents about the structure of the questionnaire, the translations along with checking the logical flow of the CAPI application developed. Additionally, this exercise also captured feedback in terms of ease of approaching respondents and availability of target respondents in the selected villages. The following were the overall objectives of the pre-test:

1. Clarity on the workability and flow of research tools
 - o *Whether all the questions are comprehensible to the investigators*
 - o *Whether the questions are sequenced properly*
 - o *Whether any change is required in the questionnaire*
2. Observation gathering in relation to the questions where the respondents are anticipated to face problems or difficulty in comprehension and understanding
 - o *Difficulties which respondents have in understanding the questions*
 - o *Completeness in coverage of the range of issues*
 - o *Relevance of issues/response options*



3. Gauging the impact of socio-cultural factors on the response to questions related to core indicators and any changes required therein
 - o *Identifying any questions which needed a modification as per the local dialect*
 - o *Checking the terminologies and the translation being used*
4. Capturing the time duration required in completion of interviews and to take note of issues related to sampling of the target groups
 - o *Ease in administering the questionnaire*
 - o *Time taken for the interview*
 - o *Problems encountered in approaching the survey population*
5. Checking the robustness in the CAPI programming
 - o *Correctness of logical routing*
 - o *Ensuring that all the skips and logical checks are programmed correctly*
 - o *Checking the flow of the questions in the CAPI module*

A one-day training of the teams for the pre-test exercise was conducted in our Bhubaneswar field office. The training was led by one member of Kantar Public Delhi research office and our Odisha state field manager. During the training, each section of the questionnaire was explained in length and the participants were also briefed on the proper usage of the CAPI application.

To have a close supervision and quality control, one team of four interviewers (three female interviewers and one male interviewer) led by one supervisor was trained and deployed on the field for the pre-test. Representative of our Delhi office and our field office accompanied the teams on the ground for the pre-test.

Based on the pre-test, modifications were undertaken in the CAPI application. Primarily these encompassed (a) modifying the display of few grid based questions (b) updates in the logical routings (c) modification in the response options for a couple of the questions. Also, based on the suggestion of the team, we also included a question to record the HHID for all the households surveyed as a part of the TBS component.

3.3. Quality Control Mechanism

Quality assurance steps were taken at each stage of research to ensure high-quality of data generated and processed. The quality monitoring during data collection followed the protocol as given below.

Table 4 Quality control mechanism

Quality Control	Data collection quality checks	Frequency of quality updates
Team Supervisor	<ul style="list-style-type: none"> – 20% accompaniments, 20% back checks and spot checks – Monitoring field plan and progress report 	Daily to State Field Manager
State Field Managers	<ul style="list-style-type: none"> – Overall quality at state level – 10% accompaniments, 10% back checks/spot checks 	Twice a week to Research Team
Core Research Team	<ul style="list-style-type: none"> – Overall quality and coordination at central level – Smooth implementation of the study – Random scrutiny and field visits 	Weekly to CARE team



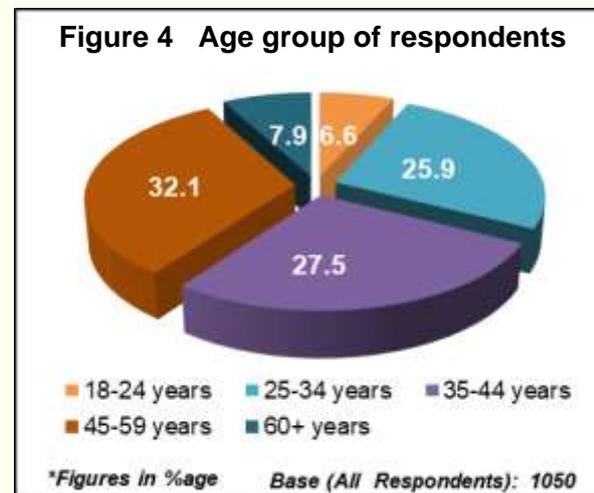
2. Socio Economic Characteristics

This subsection presents the beneficiary and household level demographic and socio-economic characteristics. As written earlier, a total of 1050 households were approached for the data collection in the project intervention villages of two districts of Odisha - Kalahandi and Kandhamal. While in Kalahandi, we conducted interviews in 552 households, in Kandhamal, interviews were done with 498 households. In each of the selected household, a beneficiary belonging to one of the seven interventions was interviewed. The overall sample size of 1050 was equally spread across each of the seven interventions. Primarily, the information presented in the continuing paragraphs includes respondent characteristics (gender, age, marital status and education attainment), the social category of the households (including the religion and the caste) and the housing characteristics (type of household, ownership, information about the drinking water and sanitation sources, dietary patterns of household etc.).

2.1. Respondent characteristic

All the participants interviewed during the study were females. The mean age of the respondents, upon calculations, came out to be 41 years. The age distribution of the respondents, as shown in the adjacent figure, indicates that close to one-third of the respondent were in the age group of 45-59 years (32.1%). More than one-fourth of the respondents also belonged to age groups of 35-44 years (27.5%) and 25-34 years (25.9%). Analysis of the data as per the district (Kalahandi and Kandhamal) also indicated similar trends and no major deviation in the respondent age was observed between the two districts. Most of the interviewed respondents (92.1%) were reported currently married.

Figure 4 Age group of respondents



To understand the prevailing educational standards among the participants, we asked them about the total number of completed years of formal education. As could be seen from the below table, at an overall level, the educational attainment of the respondents from Kandhamal was better than their counterparts Kalahandi. Overall, most of the respondents were illiterate (59.6%) and the illiteracy was more prevalent in Kalahandi (70.7%) than in Kandhamal (47.5%). More than one-third respondents were educated up to middle (35.7%). Among them, close to 12% of the respondents reportedly had completed middle school while 10.6% were educated till 'below primary'. Very few respondents had completed higher secondary or above (1.3%).



Table 5 Respondent's education

Particulars	Total	Kalahandi	Kandhamal
Base	1050	552	498
No Education	59.6	70.7	47.4
Below Primary (Between 1 to 4)	10.6	8.3	13.1
Completed Primary (Coded between 5 to 7)	13.0	11.8	14.5
Completed Middle (Coded between 8 to 9)	12.1	6.2	18.7
Completed Secondary (Coded between 10 to 11)	3.3	2.5	4.2
Completed Higher Secondary and above (Coded more than 12)	1.3	0.5	2.2

2.2. Religion and social category of the households

Predominantly, the participants households follows Hinduism (97.2%) while a small percentage of households (2.8%) does Christianity. District-wise analysis showed that Hinduism was universally prevalent in Kalahandi while in Kandhamal, more than nine out of ten households (94.2%) was a Hindu household. The remaining households of Kandhamal (5.8%) belonged to the Christian community.

The data from Census 2011 indicates that both Kalahandi and Kandhamal are tribal dominant districts with the presence of scheduled tribe population being more in Kandhamal (53.6%) than Kalahandi (28.5%). Close to one-fourth population (Kalahandi: 18.2% and Kandhamal: 15.8%) was of the scheduled castes.

The population proportions of the households covered as a part of the study were in-line with these figures and at an overall level, more than two-third households (67.6%) belonged to 'schedule tribe' social category. Analysis of the district wise proportion indicates that in Kandhamal, most of the households were of scheduled tribes (88.7%). In Kalahandi, close to half of the households were of scheduled tribes (48.7%) followed by the Other Backward Class (OBC) households [30.3%]. The district wise classification of the households based on their social category is presented in the table below.

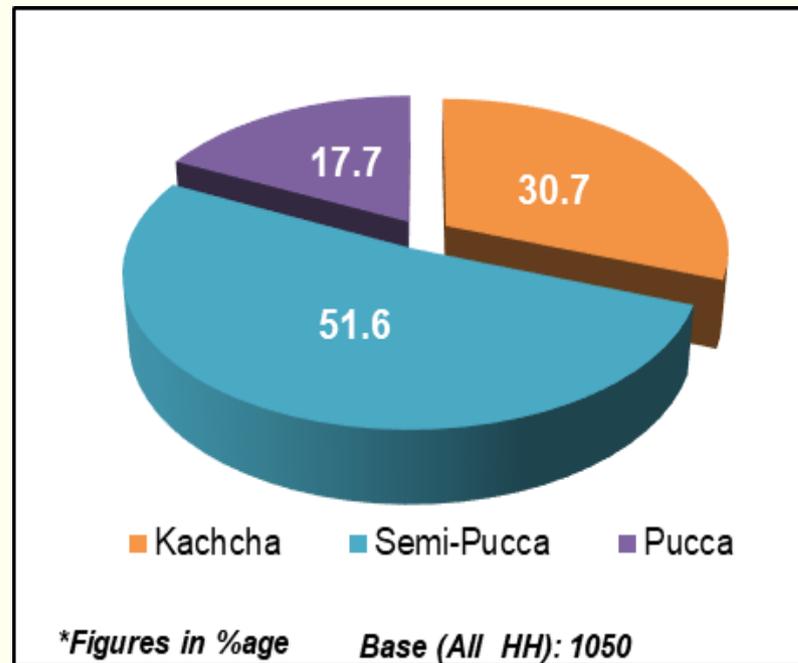
Table 6 Social category of the households

Particulars	Total	Kalahandi	Kandhamal
Base (all)	1050	552	498
Scheduled Caste (SC)	12.2	18.3	5.4
Scheduled Tribe (ST)	67.6	48.7	88.6
Other Backward Caste (OBC)	18.2	30.3	4.8
General	1.8	2.5	1

2.3. Housing characteristics

To classify a house as pucca, semi-pucca or kachha, the material used for constructing walls, roof and floor was observed. All the houses where all three viz. walls, roof and floor were made of high quality materials viz. burnt bricks, cement bricks,



Figure 5 Type of house


metal/asbestos sheets, stones (duly packed with lime or mortar) and concrete were classified as pucca houses. The ones where all of them - walls, roof and floor were made of low quality materials viz. grass, leaves, reeds, bamboo, mud, unburnt bricks, wood were classified as kachcha houses. All the remaining houses where a mix of low and high-quality materials was utilized for constructing walls, roof and floor were classified as semi-pucca houses. The assessment of the type of construction material and thereby the type of house was based upon investigator's observation.

At an overall level, more than half of household (51.6%) were 'semi-pucca'. Three out of ten households (30.7%) were 'kachcha'. However, district wise variation was observed in this indicator and while more than half of the households in Kalahandi were *kachcha* (50.2%), in Kandhamal, the proportion of 'semi-pucca' households was more (64.5%). More than one-fourth households in Kandhamal were 'pucca' too (26.5%).



Household ownership

The data on the household ownership, presented in the following table, indicated that nearly all the respondents were living in their own houses (99.8%). Only in few cases of Kalahandi district, the interviews were done with the respondents who were living in their relative house (0.4%).

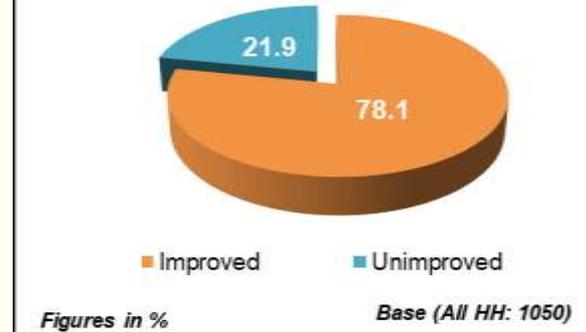
Table 7 Household ownership

Particulars	Total	Kalahandi	Kandhamal
Base	1050	552	498
Owned	99.8	99.6	100
Rented	0.0	0.0	0.0
Relatives House	0.2	0.4	0.0

Household drinking water

Respondents were asked about the main source of drinking water and for the analysis, a source was classified into an improved source or an unimproved source. Those households who stated using piped water into dwelling / yard / plot, public tap, public hand pump / tube well, tube well / borehole / hand pump in dwelling/yard/plot, protected well in dwelling / yard/plot, protected public well, protected spring and rainwater were classified as using an improved source of drinking water. The remaining sources viz. an unimproved spring, unprotected dug well, Cart with small tank / drum, Tanker /truck, Surface water (river/ dam/ lake/ pond/ canal) and bottled water were classified as an unimproved source of drinking water.

Figure 6 Households using an improved source of drinking water (%)



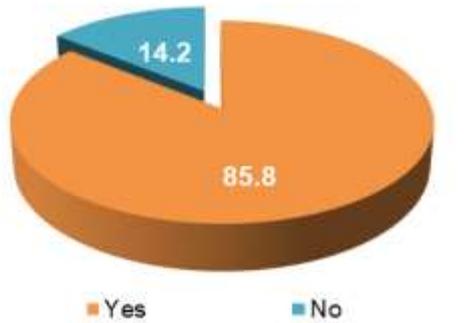
At an overall level, more than three-fourth of the households (78.1%) were using an improved drinking water source. The most common source of drinking water was 'hand pump' and more than three out of ten households (31.0 %) reported it as the main drinking water source. 'Tube well / borehole' was the next most common drinking water source reported by a little more than one-fourth households (26.7%). Among the unimproved sources, primarily the respondents used an unprotected spring (18.7%).

Main source of lighting and type of fuel used for cooking

Three-fourth households reported electricity as the main source of lighting (75.0%). Among the remaining households, the main source of lighting was reported to be Kerosene (24.8%). None of the households said that there was no lighting arrangement. When asked about type of fuel mainly used for cooking, majority of the households (87.6%) reported using 'wood'. Use of charcoal was prevalent in around 8% households. The use of charcoal was particularly high in Kalahandi district where close to 16% households reported it as a fuel for cooking.



Figure 7 Households owning agricultural land (%)



Figures in %

Base (All HH: 1050)

2.4. Ownership of agricultural land

Land is an important livelihood asset and its ownership generally opens new avenues for an increased income opportunity and facilitates poverty alleviation. At an overall level, close to nine out of ten households (85.8%) reported agricultural land ownership. In the two sampled districts, the ownership of agricultural land was more among the respondents from Kalahandi where more than nine out of ten respondent's household owned agricultural land (92.9%). Comparatively, in Kandhamal this proportion was a little more than three-fourth households (77.9%).

What about the dietary pattern and health status of the household members. We have collected so many individual and household level indicators what are the status of those indicators.



3. Kitchen Garden/ Homestead Garden

Overall, the coverage of the participants practicing kitchen garden / homestead garden was nearly equal across both the districts. Out of 150 beneficiaries interviewed in this category, 76 beneficiaries (50.7%) were from Kandhamal while 74 beneficiaries (49.3%) were from Kalahandi.

To assess the extent of respondent’s involvement in the kitchen garden, two questions were asked – (i) the total area in which they were growing kitchen garden and (ii) the average monthly production from their kitchen garden. Both these questions were asked in context of fruits as well as the vegetables. The data indicates that the practice of growing vegetables in kitchen garden was more common among the respondents than growing the fruits. The mean area per household in which kitchen gardening was being done for vegetables came out to be 0.08 acres (S.D = ±0.11) whereas the mean was 0.05 acres (S.D = ±0.07) in context of fruits. The average monthly production of vegetables from kitchen garden per household was also comparatively more than that for fruits (vegetables: 16.7 kg; fruits: 4.5 kg). The associated percentages were slightly higher among the respondents of Kalahandi than Kandhamal. To be noted is that the reported value is the average production from kitchen garden of all the months taken together.

Round the year production in kitchen garden was not observed and the mean number of months in the last year during which the respondents grew fruits and vegetables in their kitchen garden came out to be 4.3 (S.D = ±2.9). The associated mean was higher in the households of Kandhamal district 5.0 (S.D = ±3.1) than Kalahandi 3.5 (S.D ±2.7)

An involvement of both male and female members in kitchen gardening was commonly observed. In seven out of ten households (70.7%) where participants were interviewed for kitchen gardening, it was reported that both male and female members of the household contribute towards growing fruits and vegetables in kitchen gardening. However, when asked about the percentage contribution, in such households, the respondents mentioned a comparatively more involvement of female members (54.7%) than male members (45.3%). In more than one-fourth households (28.7%), the involvement of only female member was also reported.

Majority of the respondents (70.7%) reported to be using improved production practices in their kitchen garden. The proportion of usage was comparatively higher in Kandhamal (86.8%) than Kalahandi (54.1%).

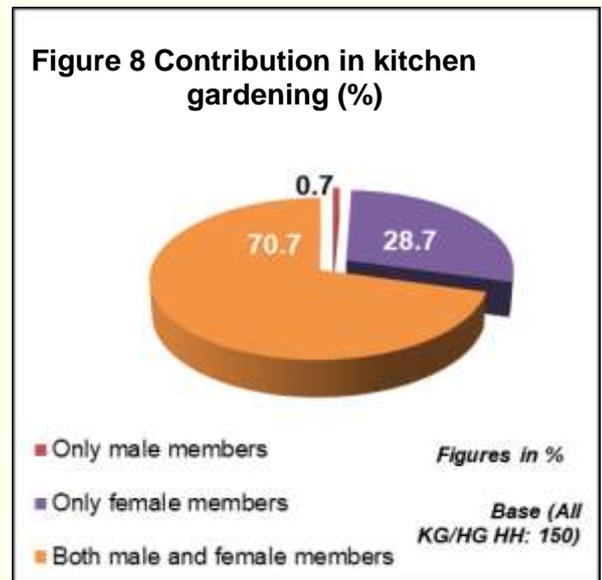


Table 8 Improved production practices in KG/ HG

Particulars	Total	Kalahandi	Kandhamal
Base (all KG/HG HH)	150	74	76
Yes, using at least one improved production practice in kitchen garden	70.7	54.1	86.8
No, not using any improved production practice in kitchen garden	29.3	45.9	13.2

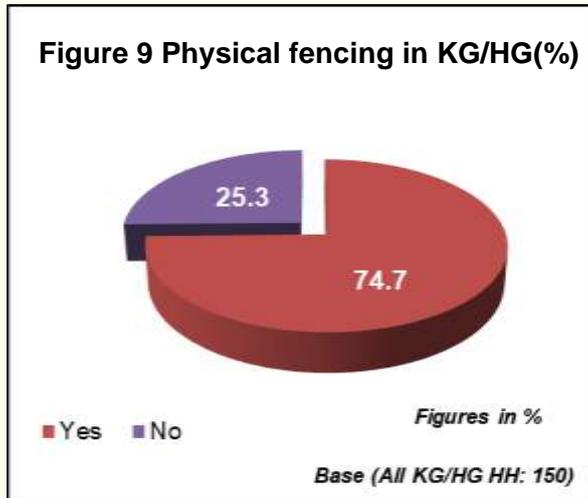
When asked about the kind of improved practice being used, primarily, the use of 'farm yard manure' (94.3%) and 'improved seed (Planting material)' (84.9%) was mostly mentioned. Among other improved practices, the respondents mentioned using 'chemical pesticide' (59.4%), bio-fertilizers (45.3%) and Vermi-compost (44.3%). The use of farm yard manure was similar across both the districts (Kalahandi: 92.5 and Kandhamal: 95.5%). However, among the use of other improved practices, district wise variation was observed, as indicated in the below table. Particularly, a huge gap of nearly 60% was observed in the use of Vermi-compost among these districts with the respondents of Kandhamal using it more commonly (66.7%) than those of Kalahandi (7.5%).

Table 9 Types of improved production practices in KG/HG (%)

Particulars	Total	Kalahandi	Kandhamal
Base (all KG/HG HH using improved production practices)	106	40	66
Improved Seed (Planting Material)	84.9	77.5	89.4
Farm Yard Manure	94.3	92.5	95.5
Vermi-compost	44.3	7.5	66.7
Traditional/ Organic Pesticide	30.2	22.5	34.8
Bio-fertilizer	45.3	32.5	53.0
Bio-pesticide	38.7	45	34.8
Chemical fertiliser	59.4	75.0	50.0
Chemical Pesticide	59.4	75.0	50.0
Water management practices (Drip irrigation, Water sprinkler etc.)	19.8	12.5	24.2
Ridges	25.5	12.5	33.3
Growing green leafy vegetables	69.8	52.5	80.3
Growing orange vegetables	32.1	17.5	40.9
Growing tubers	38.7	7.5	57.6
Growing fruits	71.7	90.0	60.6



The respondent of the kitchen garden component demonstrated a high level of protecting measures to restrict crop loss from stray livestock/ animals. At an overall level, close to three-fourth (74.7%) respondents had a physical fencing to protect entry of stray livestock/animal. The proportion of household who used physical fencing was comparatively very high in Kandhamal (92.1%) than Kalahandi (56.8%).



Among the respondents who used physical fencing as a measure to stop the entry of animals in the homestead garden, more than two third (66.1%) perceived it as effective. Interestingly, the perceived effectiveness of fencing was more among the respondents from Kalahandi (85.7%) irrespective of the fact that proportion of fencing in KG/HG was comparatively lower in Kalahandi.

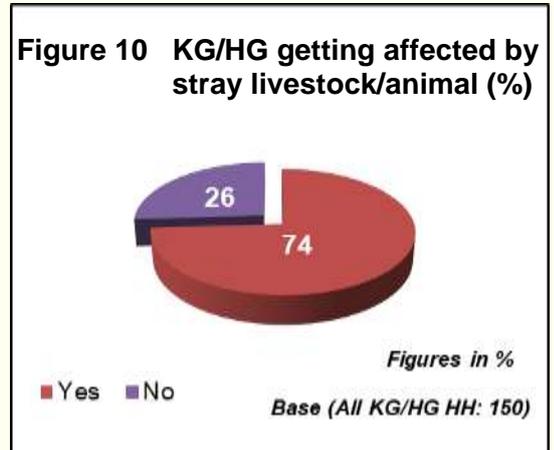
Table 10 Effectiveness of KG/HG Fencing

Particulars	Total	Kalahandi	Kandhamal
Base (all KG/HG HH having physical fencing)	112	42	70
Yes, it is completely effective	66.1	85.7	54.3
No, it is partially effective	33.9	14.3	45.7

In eight out of ten households (81.2%) which had a physical fencing around their kitchen garden, the land was being continuously guarded by the family members. The associated percentage was comparatively higher among the households of Kandhamal (85.7%) than of Kalahandi (73.8%). While a high proportion of the respondents who used the physical fencing in the kitchen garden admitted that the method is very effective, they did not universally refute the risk of stray livestock gaining access to the garden even if the measure was in place.

At an overall level, as it could be seen from the below table, almost three-fourth (74%) of the household reported that kitchen garden or its harvest gets affected due to stray livestock/ animals (pig, dogs etc.)/ poultry. The proportion of such households was higher in Kandhamal (81.6%) than Kalahandi (66.2%).

On an average, the respondents who believed that their kitchen garden or its harvest is affected due to stray livestock / animals mentioned that such a situation is observed on an average for four months



during a year. Seasonality was observed one of the reasons and nearly half of the respondents (49.5%) reported that such risks happens during the summer season. One-fourth respondents (26.1%) mentioned about the problem existing across all the seasons.

Table 11 Season in which KG/HG or its harvest is mostly affected by stray animals/livestock

Particulars	Total	Kalahandi	Kandhamal
Base (all KG/HG HH affected by stray animals/livestock)	111	49	62
Kharif	13.5	22.4	6.5
Rabi	10.8	8.2	12.9
Summer	49.5	38.8	58.1
Problem is faced in all the seasons	26.1	30.6	22.6

More than half of the respondents had received any kind of inputs for kitchen garden. The inputs included information regarding seed or plant or fertiliser or manure or implements. The corresponding proportion was three times more in Kandhamal (77.6%) than Kalahandi (24.3). In Kalahandi, most of the respondents (75.7%) reportedly did not receive inputs on kitchen gardening techniques.

Seeds (62.3%), manure (61.0%) and plants/saplings (57.1%) were the top three techniques on which inputs were received to the beneficiaries at an overall level. Most of the respondents who had received inputs / trainings for kitchen gardening, univocally mentioned CARE INDIA / TARINA project as the source of receiving training/inputs. The other sources of trainings were 'Krishi Vigyan Kendras' and 'NGOs other than CARE'. When asked about the duration when the trainings/inputs were received, mostly the time of 'last three months' or 'last six months' was reported. 'Pre-sowing' was the most commonly trained concept during the trainings.

The respondents reportedly grew crops for an average of five months in their kitchen garden. The main reason behind not planning the kitchen garden round the year was 'lack of water', as stated by more than nine out of ten respondents (94.7%). The following table provides frequency of production in the respective periods around the year at an overall level. As could be seen, the production from kitchen garden was reportedly maximum during August to October.

Table 12 Month wise frequency of production from kitchen garden (%)

Particulars	Very High	High	Moderate	Low	Very Low	Very High	High	Moderate	Low	Very Low	Very High	High	Moderate	Low	Very Low
	Total					Kalahandi					Kandhamal				
Base (all KG/HG HHs)	150					74					76				
February to April	11.3	9.3	28.0	38.0	13.3	6.8	0.0	27.0	50.0	16.2	15.8	18.4	28.9	26.3	10.5
May to July	4.0	7.3	17.3	39.3	32.0	6.8	2.7	18.9	39.2	32.4	1.3	11.8	15.8	39.5	31.6
August to October	16.7	40.7	34.0	6.7	2.0	17.6	33.8	33.8	10.8	4.1	15.8	47.4	34.2	2.6	0.0
November to January	21.3	32.0	30.7	13.3	2.7	23.0	18.9	35.1	17.6	5.4	19.7	44.7	26.3	9.2	0.0



Creeper vegetables viz. beans, ridge guard, bitter guard etc. were reportedly grown in close to nine out of ten surveyed households. They were followed by fruits (86.7%) and Solanaceae crops (brinjal, tomato, chilli etc.) (81.3%). Close to two-third households mentioned growing leafy vegetables (63.3%). As could be seen from the below table, a high proportion of the respondents also mentioned about facing pest infection/ disease in their kitchen garden due to the specific crop / vegetable / fruits being grown by them.

Table 13 Fruit/crop/vegetable grown in the kitchen garden

Particulars	Is fruit/ crop/ vegetable grown in the kitchen garden? (Base: All KG/HG HHs)			Any pest infection/disease witnessed in KG/HG due to fruit/crop/vegetable? (Base: All KG/HG HHs growing the specific fruit/crop/veg)		
	Total	D1	D2	Total	D1	D2
Leafy vegetables	63.3	60.8	65.8	77.9	68.9	86.0
Winter crop (Cabbage, Cauliflower, Radish, etc.)	44.0	27.0	60.5	78.8	70.0	82.6
Creeper (Beans, Ridge guard, Bitter guard, etc.)	88.0	87.8	88.2	75.8	73.8	77.6
Tuber and root crops (Yam, Potato, Sweet potato, etc.)	46.0	21.6	69.7	73.9	81.2	71.7
Solanaceae crop (Brinjal, Tomato, Chilli, etc)	81.3	77.0	85.5	75.4	66.7	83.1
Fruits (Papaya, Lemon drumstick, guava, etc. It also, includes drumstick leaves and flowers)	86.7	75.7	97.4	63.8	60.7	66.2

D1: Kalahandi; D2: Kandhamal

The monthly average consumption of fruits / greens and vegetables per household from the kitchen garden upon calculations came out to be 13.3 kilograms. To observe the consumption practices in a household, the respondents were asked about the number of times in a week when they consume vegetables, fruits and green leaf. The data indicate that the frequency of consumption of vegetables was highest in a week (seven times), which was followed by green leaf and fruits (two times).

Visit to open lab demonstrations for seeing and learning about the kitchen garden technologies was observed to be low and less than one-fifth (18.7%) respondents said that they have visited any session FFS. Visits to such session was primarily in Kandhamal where one-third respondents (34.2%) said that they have visited such session. In Kalahandi, most of the respondents (97.3%) denied visiting such sessions.



Table 14 Visit to open lab demonstrations for seeing and learning about the KG/HG

Particulars	Total	Kalahandi	Kandhamal
Base (all KG/HG HHs)	150	74	76
Yes	18.7	2.7	34.2
No	81.3	97.3	65.8

To understand the use of women friendly technologies and practices in kitchen gardening, the respondents were probed with the names of various technologies / practices and were asked one by one if they were using it. At an overall level, the use of spade and pick was most prominently reported and more than nine out of ten respondents (92.7%) stated its usage. More than one-fourth respondents reportedly used the fencing-metal wire (26%) and about one-fifth mentioned using a normal drip (22.7%). The district wise trends in the use of these technologies remained nearly same and no major difference was observed. However, variations were observed in the use of a couple of technologies viz. seed dibbler and wireframe for vegetables and the associated percentages were particularly high in Kandhamal (63.2% and 31.6% respectively) than Kalahandi (12.2% and 4.1%).

About one-fourth (26.7%) respondents indicated that they had been consulted in identification of technologies suited for their kitchen garden. Such consultation was higher in Kandhamal where, more than four out of ten respondents (43.4%) reported to have received such consultation. In Kalahandi, most of the respondents (90.5%) denied any such consultation.

As indicated earlier, the visits to open lab demonstration sessions were primarily reported in Kandhamal district and most of the respondents from Kalahandi did not visit open lab demonstration sessions. Hence, the associated findings have been reported in context of the respondents from Kandhamal. Among those respondents who visited these sessions, about nine out of ten have adopted spade and pick (92.3%), two third reported adoption of seed dibbler (65.4%) and wireframe for vegetable (65.4%) and about four out of ten respondents adopted fencing-metal wire (42.3%) and fencing-nylon wire (42.3%).

At an overall level, one fourth (25.3%) respondents mentioned that the Farmer Field School (FFS) sessions have helped them in identifying and prioritizing critical intervention components. Difference in the district wise figures was observed and while close to half of the respondents of Kandhamal (44.7%) found it helpful, the corresponding numbers were very low in Kalahandi (5.4%).

The role of women SHGs in allocating identified work between themselves and to their women team members regarding Kitchen garden, at an overall level, was mentioned by more than one third of the respondents (38.7%). Also, the right to decide about including or excluding the positive or negative deviant behaviour by fellow SHGs/SHG members and by men was reported by almost five out of ten respondents (48%) and about four out of ten (40%) respondents. District wise variation in these SHG related indicators was observed and Kandhamal had comparatively better statistics in comparison to Kalahandi.

At an overall level, more than two-third of the respondents (67.3%) reported that discussion among men and women about differential access to food had happened in their household. A distinct



difference was observed in the value of this indicator within the two districts. While more than one-third respondents (39.2%) from Kalahandi indicated about such discussion, in Kandhamal, the associated percentage was very high and more than nine out of ten respondents (94.7%) mentioned about it. Almost half of such respondents (47.5%) said that they had shared these discussion in their FFS session with other households with the respondents from Kandhamal being more involved (55.6%) in such discussions than those of Kalahandi (27.6%).

Overall, almost four out of ten respondents (38.7%) had aggregated demand for kitchen garden related inputs with other women or SHGs. Almost three out of ten respondents (29.3%) had aggregated and purchased inputs for kitchen garden and similarly, three out of ten respondents (27.3%) indicated aggregating their sale with other women or SHGs. District wise variation in the corresponding percentages for this indicator were observed and they were low for Kalahandi and were high for Kandhamal.

At an overall level, more than one-third (34.7%) respondents were reportedly being included in deciding the parameters for identification of demonstration sites and farmers. The inclusion was comparatively lower in Kalahandi (18.9%) than Kandhamal where half of the (50%) respondents reported such inclusion. Similarly, an inclusion of farmers from different social strata/communities was also reported by close to one-third (30.0%) respondents. The associated percentage remained low in Kalahandi (10.8%) than Kandhamal where almost half of the respondents (48.7%) reported inclusion.

More than four out of ten (42.0%) respondents mentioned that kitchen garden related FFS sessions focused on women related issues. The focus of kitchen garden related FFS sessions on women related issues was more common in Kandhamal where close to two third respondents (61.8%) asserted to it. In Kalahandi, the associated percentage was low and was 21.6%.

Promoting an utilisation of farm waste and waste from kitchen garden was mentioned by more than four out of ten respondents (42.7%). The corresponding proportion was much higher in Kandhamal (63.2%) than in Kalahandi (21.6%). The use of water conservation tools and techniques in kitchen garden was mentioned by close to one-fourth (22.0%) respondents.

More than one-third (34.0%) respondents reported that FFS sessions shared parameters to measure effectiveness. The corresponding proportion was more in Kandhamal (46.1%) than in Kalahandi (21.6%). Overall, more than four out of ten respondents (45.3%) reported discussion about positives and negatives aspects of equipment during kitchen garden FFS sessions. Four out of ten respondents (40%) reported discussion on agrochemicals while more than one-fourth (26.7%) reported discussion on best practices.

Less than four out of ten (39.3%) respondents were aware about the institutes which were specifically supporting the different components of kitchen garden. The associated proportion was higher in Kandhamal (60.5%) than Kalahandi (17.6%). On an average, respondents were aware about one institute.

Knowledge about government schemes supporting Kitchen Garden among the households was observed to be low and less than one-fifth respondents (19.3%) were aware about any such



government schemes. The awareness was higher among the respondents of Kandhamal (25.0%) than Kalahandi (13.5%). On an average, the respondents were aware about one government scheme.

Overall, high proportion of respondents (88.0%) reportedly were invest resources in kitchen garden. The corresponding percentage was higher in Kandhamal (93.4%) than in Kalahandi (82.4%). When asked about the kind of resource, while investing time was universally reported (99.2%), respondents also mentioned investing money (96.2%) and material (78.8%).



4. Goatery

Overall, the coverage of the beneficiaries involved in the goat rearing was more in Kalahandi than Kandhamal. Out of 150 beneficiaries interviewed in this category, 84 beneficiaries (56%) were from Kalahandi while 66 beneficiaries (44%) were from Kandhamal.

In terms of the current ownership, the data suggests that ownership of adult female goats was comparatively more than the adult male goats. On an average, per household, the respondents had three female adult goats while the current ownership of the male adult goats and kid goats (up to six months of age) was less and was two. The ownership trend varied across the districts as well and while the respondents who were from Kandhamal majorly owned the adult female goats (Kandhamal: 4; Kalahandi: 2), the ones from Kalahandi were observed to be having more adult male goats (Kandhamal: 1; Kalahandi: 2).

Vaccination of the goats is of paramount importance and by ensuring a reduced morbidity and mortality, vaccination is related to their overall well-being. More than two-third respondents (65.3%) reportedly were involved in regular vaccination of goats. The practice of regular vaccination was primarily limited to adult goats (male/female) and the kids were not very frequently vaccinated. The mean number of times when the goats were vaccinated per year came out to be two (S.D = ± 0.9). The key sources of goat vaccination were – 'Directorate of Animal Husbandry and Veterinary' (62.2%) and 'para veterinary / vaccinators' (34.7%). More than one-fourth respondents (27.6%) also mentioned CARE INDIA / TARINA project as the source of goat vaccination. Nearly half (48.1%) of such beneficiaries who mentioned 'CARE INDIA / TARINA' as the source of vaccination had exclusively mentioned it. The corresponding proportion was higher in Kandhamal district (32.5%) than Kalahandi (24.1%). As could be seen from the below table, the vaccination was mainly undertaken during summers (May to July) (43.9%) and rainy season (August to October) (44.9%).

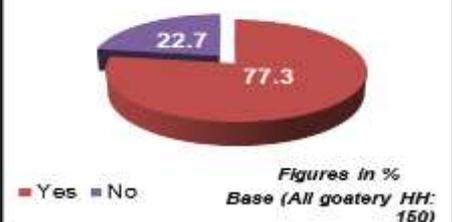
Table 15 Seasons when the goats are vaccinated

Particulars	Total	Kalahandi	Kandhamal
Base (all goatery HH involved in regular vaccination of goats)	98	58	40
February to April	21.4	20.7	22.5
May to July	43.9	32.8	60.0
August to October	44.9	43.1	47.5
November to January	26.5	20.7	35.0
There is no fixed season	4.1	6.9	0.0

However, the prevalence of full vaccination was low and while three-fourth (74%) male adult goat owners mentioned that none of their goats was fully vaccinated, two-third (66.7%) female adult goat owners denied about their goats being fully vaccinated.

At an overall level, more than three-fourth households (77.3%) had a goat shed in their household. The presence of goat sheds was

Figure 11 Goat shed (%)



very high in Kalahandi district where nine out of ten households (89.1%) mentioned about the presence of goat shed in the household. In Kandhamal, close to two-third (62.1%) households had a goat shed.

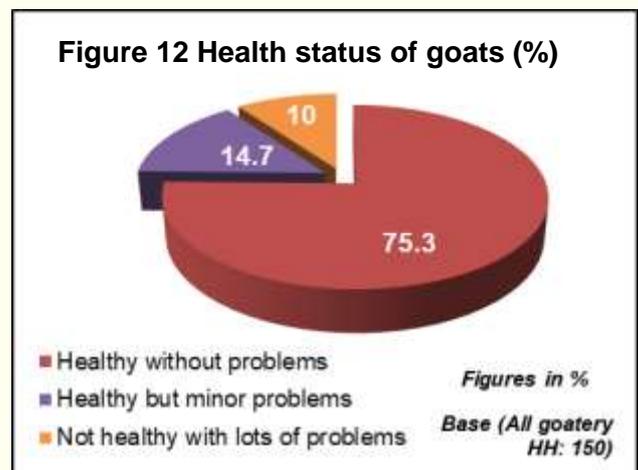
Primarily, low cost materials viz. 'bamboo' (56.9%) and 'thatched house' (49.1%) were used in the goat shed. Three out of ten respondents (30.2%) also mentioned about using 'tin housing' in the goat shed. In majority of the cases (94.1%), the cleaning of goat shed was reportedly being done by females.

Table 16 Material used in the goat shed

Particulars	Total	Kalahandi	Kandhamal
Base (all goatery HH having a goat shed)	116	75	41
Thatched house	49.1	66.7	17.1
Tin house	30.2	1.3	82.9
Grass and firewood	9.5	2.7	22.0
Bamboo	56.9	65.3	41.5
Other	1.7	2.7	0.0

Overall, eight out of ten respondents (81.3%) mentioned that they stall-feed their goat with green fodder and leaves. The corresponding proportion was higher in Kalahandi (91.7%) than Kandhamal (68.2%). 'Tree fodder' (77.9%) and 'grass fodder' (71.3%) were the key green fodder being reportedly fed. However, growing of green fodder at home was low (14.8%) at an overall level. In line with the percentages for stall-feeding, the proportion of growing green fodder was higher in Kalahandi (18.2%) than Kandhamal (8.9%). Mean number of saplings per household in which green fodder was being grown came out as seven (S.D = ± 4.6). The ones who did not report stall-feeding their goat were probed about the ways in which their goats were being fed. Primarily the respondents mentioned controlled feeding (60.7%) and free grazing (17.9%).

More than three-fourth (75.3%) of the respondents believed that their goats were healthy and were without any problem. The corresponding proportion was more in Kalahandi (79.8%) than Kandhamal (69.7%). The adjacent figure depicts the corresponding proportions in respect to the goat health. As could be seen, minor problems in the goats was reported by 14.7% respondents. One out of ten respondent said that their goat was not health and had lots of problems. Contacting a livestock inspector (54%) and carrying their goats to the nearest veterinary dispensary (40.7%) were the two key activities done by the respondents whenever they observed that their goats were ill. A very low percentage of respondents (6%) said that they do not do anything under such situations.



A little more than one-third (36.7%) respondents mentioned that they had received any training in goat rearing. The training in goat rearing was more common in Kandhamal as close to half of the beneficiaries of Kandhamal (47%) had reportedly received a training as compared to a little more than



one-fourth respondents (28.6%) of Kalahandi, as could be seen from the below table. Among the several topics covered during such trainings, the most common topics were – ‘vaccination and deworming’ (87.3%), ‘shed with raised floor construction and management’ (83.7%), ‘feed and water management’ (83.7%), ‘fodder management’ (83.7%) and ‘health and hygiene’ (81.8%). Most of the respondents who had received inputs / trainings for goatery, mentioned CARE INDIA / TARINA project as the source of receiving training. The other sources of trainings were ‘Directorate of Animal Husbandry and Veterinary’. When asked about the duration when the trainings/inputs were received, mostly the time of ‘last three months’ or ‘last six months’ was reported.

Table 17 Received training on goat rearing

Particulars	Total	Kalahandi	Kandhamal
Base (all goatery HH)	150	84	66
Yes	36.7	28.6	47.0
No	63.3	71.4	53.0

At an overall level, one-third respondents (33.3%) mentioned that they had received inputs for goat rearing. In line with the trends of the training on goat rearing, receiving of the inputs was comparatively more common among the respondents from Kandhamal (42.4%) than Kalahandi (26.2%). The inputs were primarily received on vaccination (90%), deworming medicine (78%) and buck for breeding (74%). As reported for the trainings on goat rearing, CARE INDIA / TARINA project was the key source of inputs for goat rearing in the project areas. One out of ten households (11.3%) reported to receive any message or training on the benefit of consuming animal protein. Primarily, such message was received during last three months and CARE INDIA / TARINA project was the key source of such message/training.

Three-fourth households (76%) were reportedly involved in the consumption of goat meat. On an average, the consumption was once in a month and the mean quantity of goat meat consumption was 1.2 KGs. Producing of the goat meat was primarily during the winter season (November to January) [high to very high = 34.2%] followed by autumn season (August to October) [high to very high = 31.5%]. Consumption of the goat meat also followed same trends and it was primarily during winter season [high to very high = 27.0%] followed by autumn season [high to very high = 25.2%]. In these households, the goat meat was first served to elderly members and it was followed by the serving to adults in the age group of 18 to 59 years. It was observed that female adult members were served after serving male adult members and the same order of serving was followed in the case of girl child and boy child. When asked about how often the goat meat was being equally distributed in household, ‘occasionally’ (64.0%) was the most commonly reported. Nine out of ten such households (90.1%) also mentioned that they buy goat meat. The key sources of buying the goat meat being from local haat (56.0%) or from village (57.0%). Selling of the goat meat was also mainly reported to be at local haat (64.0%). Mostly the respondents sold their goat meat to local traders in haat (62.0%) and local trader in village (58.7%).

When asked about using different women friendly technologies in goatery, primarily the respondents mentioned about vaccination (63.3%), castration (56.7%) and deworming (56%).



Table 18 Use of different women friendly technologies

Particulars	Total	Kalahandi	Kandhamal
Base (all goatery HH)	150	84	66
Castration	56.7	53.6	60.6
Deworming	56	50	63.6
Dehorning	21.3	28.6	12.1
Dehoofing	16.7	21.4	10.6
Tagging	23.3	20.2	27.3
Vaccination	63.3	63.1	63.6

Visit to open lab demonstrations for seeing and learning about the goatery technologies was observed to be low and less than one-fifth (15.3%) respondents said that they have visited such sessions. Visits to such session was primarily in Kandhamal where more than one-fourth respondents (27.3%) said that they have visited such session. In Kalahandi, most of the respondents (94%) denied visiting such sessions.

Table 19 Visit to open lab demonstrations for seeing and learning about goatery

Particulars	Total	Kalahandi	Kandhamal
Base (all goatery HHs)	150	84	66
Yes	15.3	6.0	27.3
No	84.7	94.0	72.7

At an overall level, almost two out of ten (17.3%) respondents mentioned that the Farmer Field School (FFS) sessions have helped them in identifying and prioritizing critical intervention components. Difference in the district wise figures was observed and while in Kandhamal, close to one third of the respondents (30.3%) reported it as helpful, the corresponding numbers were comparatively lower in Kalahandi (7.1%).

The role of women SHGs in allocating identified work between themselves and to their women team members regarding goatery, at an overall level, was mentioned by almost three out of ten respondents (28.0%). One-third respondents indicated that the SHGs had a right to decide about including or excluding the positive or negative deviant behaviour by fellow SHGs/SHG members (33.3%) and by men (32.7%). District wise variation in these SHG related indicators was observed and Kandhamal had comparatively better statistics in comparison to Kalahandi.

At an overall level, about three out of ten respondents (29.3%) reported that discussion among men and women about differential access to goat meat had happened in their household. The corresponding percentage of discussions was higher in Kandhamal (36.4%) than in Kalahandi (23.8%). Among such respondents, about two third have addressed portioning the meat at the start (65.9%), about three out of ten reported allowing women to eat with men (29.5%) and less than one out of ten reportedly allowed women to eat before men (4.5%). More than one third of the respondents (36.4%) said that they had shared these discussion in their FFS session with other households. The respondents from



Kandhamal were more proactively involved in sharing such discussions (58.3%) than those of Kalahandi (10.0%).

Overall, two out of ten respondents (23.3%) had aggregated demand for goatery related inputs with other women or SHGs. Less than two out of ten respondents (16.0%) had aggregated and purchased inputs for goatery and similar percentages (16.7%) indicated aggregating their goats with other women or SHGs. District wise variation in the corresponding percentages for this indicator were observed and the associated percentages were low for Kalahandi and were high for Kandhamal.

One-fourth respondents (24.7%) mentioned that women were being included in deciding the parameters for fodder demonstrations. The inclusion was comparatively lower in Kalahandi (14.3%) than Kandhamal where more than one third of the (37.9%) respondents reported such inclusion. Allocation of fodder demonstrations to farmers from different social strata / communities was also reported by close to one-fifth respondents (18.0%). In Kalahandi, the associated percentage remained low (7.1%) as compared to Kandhamal where almost one-third of the respondents (31.8%) reported allocation.

At an overall level, three out of ten (30.7%) respondents mentioned that goatery related FFS sessions focused on women related issues. The focus of goatery related FFS sessions on women related issues was more common in Kandhamal where half of the respondents (51.5%) conformed it. In Kalahandi, the associated percentage was low and was 14.3%.

About one-fifth (22.7%) respondents were aware about the institutes which were specifically supporting the different components of goat rearing. The associated proportion was higher in Kandhamal (33.3%) than Kalahandi (14.3%). On an average, respondents were aware about one such institute. Seven out of ten respondents (70.6%) mentioned that input of meetings with such institutions and their experts have been shared with them. The associated percentage remained low in Kalahandi (25.0%) than Kandhamal where almost all respondents (95.5%) reported sharing of inputs.

Knowledge about government schemes supporting goatery among the households was observed to be low and around one out of ten respondents (14.0%) were aware about any such government schemes. The awareness was higher among the respondents of Kandhamal (22.7%) than Kalahandi (7.1%). On an average, the respondents were aware about one government scheme.

Overall, more than two-third of the respondents (69.3%) reportedly were investing resources in goatery. The corresponding percentage was higher in Kalahandi (71.4%) than in Kandhamal (66.7%). When asked about the kind of resource, while investing their time was universally reported (98.1%), respondents also mentioned investing money (94.2%) and material (76.9%).



5. Poultry

Overall, the coverage of the beneficiaries involved in poultry was nearly equal across both the districts. Out of 150 beneficiaries interviewed in this category, 78 beneficiaries (52%) were from Kalahandi while 72 beneficiaries (48%) were from Kandhamal.

The mean number of years since when the respondents were involved in poultry came out as five. 'Desi' breed of poultry birds was most commonly owned by the respondents. Close to half of the respondents mentioned their unawareness about the name of the type / breed of the bird owned by them. On an average, single breed of the bird was owned by the respondents. The following grid denotes the several types of poultry birds which were available at the respondent's poultry farm/backyard. As could be seen, primarily, the birds were 'laying hen' (82.0%) and 'chicks' (74.0%). Close to two-third respondents also mentioned the presence of 'cocks' (62.0%) in their poultry farms. On an average, the respondents had six chicks, three laying hens, three pullets and two cocks in their poultry farm. The ownership trend varied across the districts as well and the mean ownership of the poultry birds was comparatively more in Kalahandi than in Kandhamal.

Table 20 Several types of birds available at the poultry farm/ backyard

Particulars	Total	Kalahandi	Kandhamal
Base (all poultry HH)	150	78	72
Laying hen	82.0	73.1	91.7
Pullets (a young hen, especially less than one year old)	25.3	30.8	19.4
Cocks	62.0	65.4	58.3
Chicks	74.0	75.6	72.2
Growers	2.7	1.3	4.2

Majority of the beneficiary households (92.7%) were not providing any medication to their birds. The ones who were from Kandhamal, although low, were comparatively more active in providing medicines to their birds (13.9%) than Kalahandi (1.3%). Majority of the respondents (72.7%) said that in a year, they provided vaccination once to their birds. When asked about key sources of vaccination, close to half (45.5%) mentioned it to be 'Directorate of Animal Husbandry and Veterinary'. 'CARE INDIA / TARINA' was quoted by more than one-fourth of the respondents (27.3%). Vaccination was majorly reported during winters (November to January) [36.4%] and spring (February to April) [26.4%].

At an overall level, more than half of the households (57.3%) had a poultry house in their household. The presence of poultry houses was comparatively higher in Kalahandi district where three-fourth households (75.6%) mentioned about the presence of poultry house in the household. In Kandhamal, close to four out of ten households (37.5%) had a poultry house.



Yes, I am aware about the concept of 'backyard poultry'. CARE India (TARINA) is currently promoting the backyard poultry. They provide trainings on poultry farming. Approximately 70 households are doing backyard poultry in our area.

DI, Kalahandi

The poultry house is generally made of bamboo.

DI, Kandhamal

Primarily, low cost materials viz. 'bamboo baskets' (64.0%) and 'mud and stone' (41.9%) were being used in the poultry house. Three out of ten respondents (30.2%) also mentioned about using 'baked mud' in the poultry house. In majority of the cases (73.3%), it was mentioned that there was a separate poultry house in the house. In around one-fifth cases, the poultry birds were either kept inside the house (17.4%) or were kept in the courtyard (9.3%).

The cleaning of poultry shed was primarily responsibility of females (96.5%). The following table illustrates the corresponding percentages of materials used in construction of the poultry house.

Figure 13 Health status of poultry birds (%)

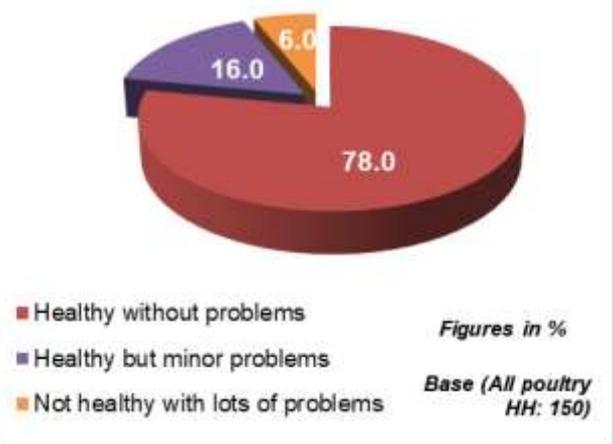


Table 21 Material used in the poultry shed/ poultry house

Particulars	Total	Kalahandi	Kandhamal
Base (all poultry HH having a poultry shed/poultry house)	86	59	27
Bamboo basket	64.0	74.6	40.7
Baked mud	29.1	23.7	40.7
Bench type	18.6	25.4	3.7
Brick and cement	7.0	3.4	14.8
Mud and stone	41.9	49.2	25.9

Low percentage of the respondents (8.1%) mentioned that they have received any support for preparing the poultry house from external organization. Support for preparing the poultry house was primarily from the Government (28.6%) or from CARE INDIA / TARINA (28.6%).

More than three-fourth (78.0%) of the respondents believed that their birds were healthy and were without any problem. The corresponding proportion was more in Kandhamal (84.7%) than Kalahandi (71.8%). The following figure depicts the corresponding proportions in respect to the poultry bird health. As could be seen, minor problems in the poultry was reported by 16.0% respondents. Less than one out of ten respondents said that their poultry was not healthy and had lots of problems. The



treatment seeking behaviour for the sick poultry birds was observed to be low as majority of the respondents (51.3%) said that they do not do anything under the event when their birds get sick. Close to one-third respondents (31.3%) mentioned about managing the illness on their own with the help of herbal treatment. Contacting a livestock inspector (10.7%) and carrying their birds to the nearest veterinary dispensary (13.3%) were reported to be low under such situations. Respondents mentioned that the poultry birds mainly fall sick during summers (50%) and winters (24%).

One out of ten (10.0%) respondents mentioned that they had received any training on poultry rearing. The associated indicators have not been reported owing to a low base.

Table 22 Received training on poultry rearing

Particulars	Total	Kalahandi	Kandhamal
Base (all poultry HH)	150	78	72
Yes	10.0	12.8	6.9
No	90.0	87.2	93.1

The commonality of spreading message or training the beneficiaries on the benefits of consuming animal protein was low and less than 5% respondent mentioned about receiving such trainings.

Majority of the respondents believed that meat is more important for home consumption than eggs. The corresponding percentages were 58% for meat and 26.7% for eggs. On an average, the average household level consumption of meat was four times in a month while the corresponding consumption level for eggs was seven times in a month. In these households, the meat dishes / eggs were first served to elderly members and it was followed by the serving to adults in the age group of 18 to 59 years. When asked about the equitable distribution of quantity of meat / egg in the household, respondents either quoted frequency as 'occasionally' (51.2%) or 'most of the times' (43.3%).

A little over one-fourth (27.6%) respondents said about any seasonal difference in egg consumption. The ones who indicated seasonality, reported that egg is mainly consumed in their households either during autumn season (August to October) [38.7%] or winter season (November to January) [37.1%]. Similar to the reported trends for the egg consumption, an existence of seasonality in meat consumption was reported by low proportion of respondents (25.2%). Data indicated a district wise variation in respect to the perceived seasonality in meat consumption and while close to half of respondents from Kandhamal (44.4%) indicated an existing seasonal difference, the associated percentage was very low among the respondents from Kalahandi (6.2%). At an overall level, the most frequent consumption of meat (moderate to very high) was reported during winter season (68.9%) followed by autumn season (53.5%).

One-third beneficiaries (33.3%) were providing any supplemental feeding to backyard poultry. The corresponding percentages were higher among the respondents from Kandhamal (41.7%) than Kalahandi (25.6%). At an overall level, more than three-fourth such respondents (78%) knew about the economic feed formulation for the poultry birds. Giving finisher ration to the poultry birds before marketing to fetch a better price was being followed by less than two out of ten households (17.3%). Similar percentages were observed for the question where the respondents were asked if they think that they were providing a nutritionally balanced diet to poultry birds deprived of scavenging during



lean periods and adverse weather conditions. At an overall level, less than two out of ten respondents (18.0%) said 'yes' to this question, the corresponding percentages being higher among the ones from Kandhamal (25.0%) than Kalahandi (11.5%).

6. Dairy

Livestock farming includes rearing of animals for food and other related uses. It is a key livelihood and risk mitigation strategy for small and marginal farmers. Livestock rearing helps beneficiaries economically and supplies them food throughout the year. Dairying has been considered as one of the activities aimed at alleviating the poverty and unemployment especially in the rural areas in the rain-fed and drought-prone regions⁴. The small-scale dairy farming is a viable option in the rural area and contributes to livelihood. The dairy farmers need capacity to improve the efficiency of small scale dairy farming. Rearing cow has been practiced by village communities for many generations. Dairy cow is the asset to local populations as they contribute significantly to food security, poverty alleviation and the promotion of gender equality.

Overall, the coverage of the beneficiaries practicing dairy farming was more in Kalahandi than Kandhamal since the dairy specific activities were primarily being implemented in the former district as compared to the latter. Out of 150 beneficiaries interviewed in this category, 93 beneficiaries (62%) were from Kalahandi while 57 beneficiaries (38%) were from Kandhamal.

The mean number of years since when the respondents were involved in dairy farming was ten years. On an average, the beneficiaries owned four dairy livestock (cattle/buffalo). The mean ownership of the livestock was found to be comparatively more among the beneficiaries of Kandhamal (five) than Kalahandi (three). The ownership was primarily of the cows and very low percentage of the beneficiaries reported an ownership of buffalo. When asked about the different breeds of the cow, mostly the respondents mentioned owning 'Desi' (36%) and 'Jersey' (18.7%). Majority of the cows owned by the respondents were of pure breed (Desi pure breed: 93.5%; Jersey pure breed: 58.9%). Low proportion of respondents mentioned owning cross breed cows (Desi cross breed: 4.1%). When asked about the type of the cows, the respondents mainly mentioned it to be 'lactating cow / dairy cow' and 'dry cow'.

When the respondents were asked about average quantity of milk being produced by a cow or a buffalo during lactation, the average per cow came out to be 1.49 liters. Data indicated that mostly the produced cow's milk was being used for domestic household consumption rather than for the selling purpose [mean quantity of milk (household consumption) = 1.14 liters; mean quantity of milk (selling) = 0.71 liters]. The average milk production per buffalo was reported to be 0.44 liters. In contrast to the milk production for cow, mostly the respondents were involved into sale of buffalo's milk and the average quantity of buffalo's milk (for selling purpose) was 1.29 liters as compared to the average quantity of buffalo's milk for household consumption (0.60 liters). Less than one out of ten dairy households (6.7%) reportedly purchased milk from any other source (other than their own livestock).

⁴ Sujatha N.A, Selvi V.D; "Progressive trend of Indian dairy industry", EPRA International Journal of Economic Growth and Environmental issues, Vol-3, June-May 2015-16



In such households, the mean quantity of the milk purchased from any other source per household was reported as 1.4 liters.

Majority of the households (82.0%) believed that their livestock was healthy and was without any problem. The corresponding proportion was nearly equal in Kandhamal (82.5%) and Kalahandi (81.7%). The adjacent figure depicts the corresponding proportions in respect to the livestock health. As could be seen, minor problems in the livestock was reported by 18.0% respondents. None of the respondent said that their livestock was not healthy and had lots of problems.

Contacting a livestock inspector (57.3%) and carrying their livestock to the nearest veterinary dispensary (49.3%) were the two key activities done by the respondents whenever they observed that their livestock was ill. Close to one-fourth respondents (23.3%) mentioned that they avail the services of Paravet / Gomitra with payment of service charges. A very low percentage of respondents (1.3%) said that they do not do anything under such situations.

The responsibility of feeding the cattle was mainly with the female members of the household (49.3%) and the head of the household (36.7%). Green fodder (96.7%), dry fodder (40.7%) and crop residues (including chokar/ chuni/ khali etc.)(34.7%) were the primary constituents of the feed given to the livestock.

Less than two out of ten (16.0%) respondents mentioned that they had received any training on animal rearing. When asked about the training on package of practice, majority of the households (96.7%) denied receiving it. The associated indicators have not been reported owing to a low base.

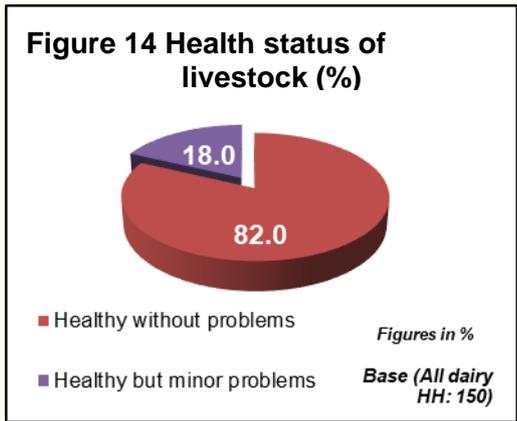
Table 23 Received training on animal husbandry

Particulars	Total	Kalahandi	Kandhamal
Base (all dairy HH)	150	93	57
Yes	16.0	16.1	15.8
No	84.0	83.9	84.2

In dairy farming, there are certain practices which are considered as improved dairy practices. These are adopted to provide better living environment with improved nutritional and health status of the cattle. When asked about various improved dairy farming practices, majority of households mentioned that they had adopted 'proper feed and water management' (72.7%) practice. Among other key practices were 'improved housing with proper sanitation and ventilation' (56.0%) and 'Fodder grass cultivation and preparation of hay and silage for feed security' (54.0%). Four out of ten households were also involved in 'periodic deworming' (44.0%) and 'complete and regular vaccination' (42.7%).

Milk is mainly produced for family consumption and not for sale.

- IDI, Kandhamal



I clean the cow shed and feed them also. My husband drives cows sometimes.

- DI, Kalahandi



The associated percentages of practicing different dairy farming techniques has been presented in the below grid.

Table 24 Different practices in dairy farming

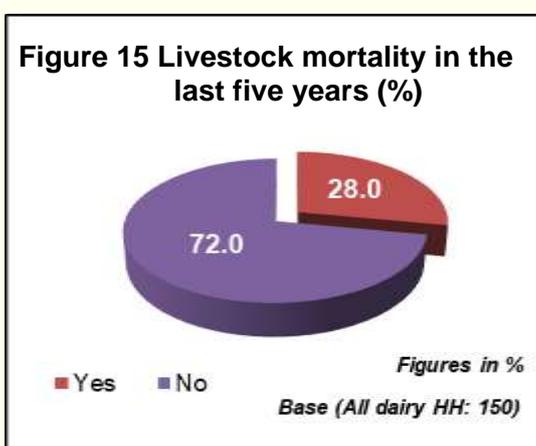
Particulars	Total	Kalahandi	Kandhamal
Base (all dairy HH)	150	93	57
Proper feed and water management	72.7	65.6	84.2
Improved housing with proper sanitation and ventilation	56.0	46.2	71.9
Fodder grass cultivation and preparation of hay and silage for feed security	54.0	45.2	68.4
Periodic deworming	44.0	39.8	50.9
Complete and regular vaccination	42.7	33.3	57.9
Selective breeding	17.3	10.8	28.1
Milk collection, primary processing	16.0	10.8	24.6
Provision for urea molasses block with mineral supplementation	10.0	6.5	15.8

Knowledge and awareness about other aspects related to dairy farming viz. milk collection centres, loans and insurance was observed to be low among the beneficiaries, as could be seen from the below table.

Table 25 Knowledge and awareness about various dairy farming aspects

Particulars	Total	Kalahandi	Kandhamal
Base (all dairy HH)	150	93	57
Knowledge about milk collection centres	10.7	12.9	7
Knowledge about livestock loans	13.3	10.8	17.5
Knowledge about livestock insurance	13.3	9.7	19.3

Figure 15 Livestock mortality in the last five years (%)



When asked about the instances of livestock death during the past five years, more than one-fourth households (28.0%) mentioned about the death of one or more than one livestock. To understand the associated burden of livestock mortality, the ones who had reported livestock death were further asked about the numbers of cows and buffaloes who have died. The mean number of cows who have died during the last five years came out to be two while on an average, one buffalo had died in the beneficiary households. The incidences of livestock mortality was observed to be comparatively more in Kandhamal (54.4%)

than Kalahandi (11.8%). During qualitative discussions, it came up that a reduction in the the instances of the livestock mortality has been observed in the villages.



Table 26 Livestock mortality in the last five years

Particulars	Total	Kalahandi	Kandhamal
Base (all dairy HH)	150	93	57
HHs reporting livestock mortality	28.0	11.8	54.4
HHs with no livestock mortality	72.0	88.2	45.6

When asked about the key reasons behind the livestock mortality, the two key causes which came up were accident (28.6%) and skin disease (16.7%). Close to half of the respondents (50.0%) also expressed unawareness about the reason behind the death of the livestock.

Awareness about livestock insurance was among 13.3% of the interviewed respondents. A comparatively higher awareness was observed among the ones from Kandhamal where one-fifth respondents (19.3%) had heard about livestock insurance as compared to Kalahandi where the associated percentage was 9.7%.

Compared to the last few years, the death rate of the cattle has decreased because we now, take care of the cattle properly and get them vaccinated or dewormed on time.

*-
DI, Kandhamal*

Table 27 Awareness about livestock insurance

Particulars	Total	Kalahandi	Kandhamal
Base (all dairy HH)	150	93	57
Aware	13.3	9.7	19.3
Unaware	86.7	90.3	80.7

Among the ones who were aware about livestock insurance, one-fourth (25.0%) had reportedly ever took an insurance for their livestock. The three primary sources of information about the livestock insurance was CARE INDIA / TARINA project (50.0%), friends / relatives (40.0%) and banks / financial institutions (25.0%).

Similar trends existed in terms of knowledge about the livestock loans and at an overall level, one out of ten respondents (13.3%) was aware about it. The comparative awareness was higher among the respondents of Kandhamal (17.5%) than Kalahandi (10.8%), as could be seen from the below table. One-fifth respondents (20.0%) who were aware about the livestock loan, reportedly ever took it. Banks and financial institutions were universally reported as the source of livestock loan by these respondents.

Table 28 Awareness about livestock loans

Particulars	Total	Kalahandi	Kandhamal
Base (all dairy HH)	150	93	57
Aware	13.3	10.8	17.5
Unaware	86.7	89.2	82.5

At an overall level, one out of ten respondents (12.0%) believed that the Farmer Field School (FFS) sessions on dairy farming have helped them identify and prioritize critical intervention components. The associated percentages were higher in Kandhamal (21.1%) than Kalahandi (6.5%). Focus of FFS sessions on women related issues in dairy farming was reported by 16.0% respondents at an overall



level. Again, the associated percentages were higher among the respondents from Kandhamal (28.1%) than Kalahandi (8.6%).

Awareness about the government schemes supporting the components of dairy remained low among the respondents and at an overall level, less than one out of ten respondents (8.0%) were aware about it.

7. Crop Diversification into Pulses/ Legumes/ Vegetables

Crop diversification aims at enhancing plant productivity, quality, health and nutritional value and building crop resilience to diseases, pest organisms and environmental stresses. Crop diversification refers to the addition of new crops into cropping systems for agriculture production on a farm considering the different returns from value added crops with complimentary marketing opportunities. Crop diversification is intended to give a wider choice in the production of variety of crops in each area to expand the production related activities on various crops and to lessen risk.

When asked about the various crops being cultivated by the participant households, more than three-fourth beneficiaries (75.3%) reported being involved in the cultivation of rice. This was followed by the proportions who were involved in cultivation of gram (64.0%), vegetables (59.3%) and pulses (58.7%). District wise variation in the proportional cultivation was observed and while the beneficiaries of Kalahandi were more involved in cultivation of gram and rice, the ones from Kandhamal were more involved in the cultivation of vegetables, pulses and rice. The following table illustrates the district wise cultivation of the crops.

Table 29 Cultivation of the crops by the participant households

Particulars	Total	Kalahandi	Kandhamal
Base (all crop HH)	150	93	57
Rice	75.3	77.8	70.6
Gram	64.0	78.8	35.3
Vegetables	59.3	42.4	92.2
Pulses	58.7	49.5	76.5
Maize	34.7	24.2	54.9
Cotton	19.3	29.3	0.0
Jute	15.3	11.1	23.5
Soyabean	14.0	9.1	23.5
Corn	13.3	11.1	17.6
Tobacco	0.7	0.0	2.0

A high proportion of respondents (81.3%) were aware about the nutritional values of pulses/ legumes or vegetable crops. The associated awareness being more in Kandhamal (84.3%) than Kalahandi (79.8%). During qualitative discussions too, the respondents indicated that the farmers in their village were aware

Yes, farmers are aware about recommended moisture content for grains and pulses. We have received this information through CARE India.

IDI, Kandhamal



about the nutritional value and the recommended moisture content for grains and pulses.

More than eight out of ten beneficiaries (84.0%) were involved in growing of any one, any two or all of pulses/ legumes or vegetables by themselves. In line with the cultivation trends, the respondents from Kandhamal were comparatively more growing pulses/ legumes or vegetables on their own (92.2%) than those from Kalahandi (79.8%). When asked about the key challenges being faced in the cultivation of the crops, the respondents primarily quoted 'disease/insect attack' (60.3%), 'quality of seeds' (52.4%) and 'water availability' (49.2%).

Table 30 Key challenges in cultivation of crops

Particulars	Total	Kalahandi	Kandhamal
Base (all dairy HH)	150	93	57
Disease/ Insect attack	60.3	59.5	61.7
Quality seed	52.4	65.8	29.8
Water availability	49.2	54.4	40.4
Open grazing	11.9	17.7	2.1
Do not face any challenges	8.7	2.5	19.1

Data indicates that the introduction of the advancement in agriculture viz. agricultural tools/implements has helped the farmers in increasing their production. This was evident from the fact that the average quantity of the crops being produced post introduction of agricultural tools/implements (65.9 kg) was comparatively more than that which was being produced prior to the introduction of these tools/implements (53.7 kg).

The following grid presents an overview about the awareness of different improved cultivation practices. As could be seen, the awareness levels of beneficiaries from Kandhamal was comparatively more than those of Kalahandi. Primarily, the respondents were aware about periodic weeding, role of chemical fertilisers in farming, seed production and integrated pest management. Use of these techniques in the farms was high among the ones who were aware about them.

Table 31 Awareness about different cultivation practices

Particulars	Total	Kalahandi	Kandhamal
Base (all crop HH)	150	93	57
Periodic weeding	71.3	60.6	92.2
Role of chemical fertilizers in farming	65.3	63.6	68.6
Seed Production	62.0	57.6	70.6
Integrated Pest Management (IPM)	62.0	56.6	72.5
Safe use of pesticides and right method of spraying	52.0	50.5	54.9
Seed Germination Test	46.7	38.4	62.7
Improved method of compost making	38.0	25.3	62.7
Seed treatment with inorganic pesticide	34.0	25.3	51.0
Benefits of summer ploughing	33.3	22.2	54.9



Soil Testing and Collection of soil samples	24.0	16.2	39.2
Integrated Nutrient Management (INM)	20.7	9.1	43.1
Pulses seed inoculation with nitrogen fixing bacterial culture	14.0	3.0	35.3

At an overall level, one-fifth respondents reportedly had received the training on package of practices (POPs). The corresponding percentage was more in Kandhamal where more than half of the respondents mentioned about being trained on POPs (51.0%) than Kalahandi were very few (4%) mentioned about such training. Various concepts on which the training was received during POPs included 'Seed Production' (90.0%), 'role of chemical fertilizers in farming' (76.7%), 'seed treatment with inorganic pesticide' (73.3%), 'Integrated Nutrient Management (INM)' (73.3%), 'improved method of compost making' (70%) and 'seed germination test' (70.0%).

Table 32 Received training on package of practices (POPs)

Particulars	Total	Kalahandi	Kandhamal
Base (all crop HH)	150	99	51
Yes	20.0	4.0	51.0
No	80.0	96.0	49.0

At an overall level, close to four out of ten beneficiaries (38.0%) mentioned that they had received any training on the improved storage of pulses, grains and vegetable seeds. The topics covered in these trainings were reported to be 'sun-drying' (89.5%), 'limiting the moisture content in the crops' (84.2%), 'Proper ventilation in the storage area' (64.9%), 'Installation of storage stands/raised bed to avoid the storage of the produce on floor' (56.1%), 'Use of hermetic bags (GrainPro bags)' (47.4%). **CARE INDIA / TARINA project was the key source of such trainings as it was universally quoted by the respondents that they have received the training by CARE INDIA / TARINA project team.** Receiving the trainings during the last three months was the most commonly received response when asked about the duration when the training was received.

Figure 17 Received training on improved

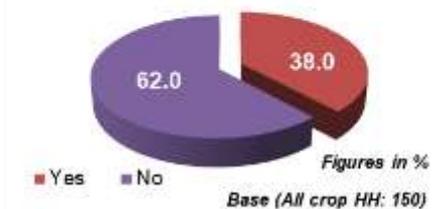
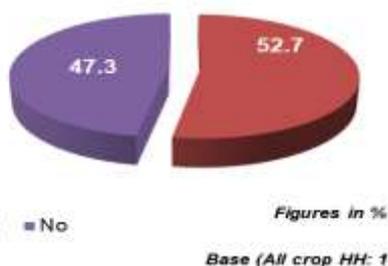


Figure 16 Physical fencing in crops (%)



The respondent demonstrated a high level of protecting measures to restrict crop loss from stray livestock / animals. At an overall level, more than half (52.7%) respondents had a physical fencing in their crop area to protect entry of stray livestock/animal. The proportion of household who used physical fencing was comparatively very high in Kandhamal (92.2%) than Kalahandi (32.3%).



Among the respondents who used physical fencing as a measure to stop the entry of animals in the homestead garden, close to two third (62.0%) perceived it as effective.

Guarding of the crop area by the family members was reportedly being done in more than two-third participant households (64.7%).

The mean quantity of pulses consumed by the household members in a month was 6.5 kilograms. Respondents mentioned that for a major part of the year (on an average for seven months), the pulses/legumes/ vegetables being produced by them was sufficient for their family consumption. Buying or under eating of the pulses/legumes in the diet around the year was reported by the beneficiaries in the Kalahandi district (13.1%).

Majority of the beneficiaries (90%) expressed that they would like to expand the growing practice of pulses/legumes or vegetables in their farm land provided a support is received. The three key areas in which support was sought included 'availability of fertilizer / seeds' (80%), 'monetary support' (74.8%) and 'guidance on correct cultivation process' (40.7%).



8. Drudgery reduction/ Labour Saving Technologies

People do many of the most difficult farm tasks in India which included weeding, harvesting and post-harvest processing of produce. These tasks are time consuming and full of drudgery. There are some improved implements and machinery which can help reduce drudgery and physical reduction.

Majority of the households (90.7%) were reportedly using the agricultural tools or other improved devices in agriculture and allied activities. The use of such tools / devices was more in Kandhamal district (94.4%) than Kalahandi district (85.0%).

When asked about the different tools, it was observed that the use of manual agricultural tools or devices was comparatively more among the participant than the automated tools / devices. The following table lists down the top five agricultural tools of each type – manual and automated being used by the beneficiaries. In the manual category, use of 'sickle' (99.3%), 'kodi' (94.9%) and 'winnower' (94.9%) was predominant whereas in automated category, the respondents were mainly using 'tractor drawn power tiller' (36.8%) and 'tractors' (36.0%).

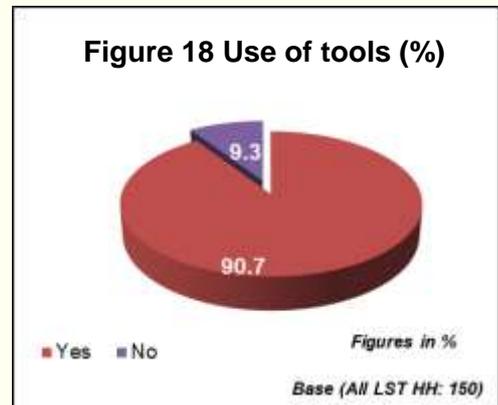


Table 33 Use of various agricultural tools

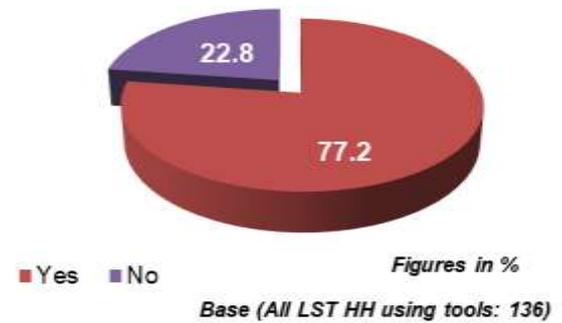
Particulars	TOTAL	Kalahandi	Kandhamal
Base (all LST HH using agricultural tools)	136	51	85
MANUAL TOOLS			
Sickle	99.3	98.0	100.0
Kodi	94.9	96.1	94.1
Winnower	94.9	90.2	97.6
Plough	88.2	82.4	91.8
Land leveler	77.2	64.7	84.7
AUTOMATED TOOLS			
Tractor drawn Power tiller	36.8	35.3	37.6
Tractor	36.0	47.1	29.4
Electricity Powered Thresher cum winnower	18.4	23.5	15.3
Light weight pump	12.5	3.9	17.6
Power weeder	12.5	3.9	17.6

A comparative lower usage of the agricultural tools by the respondents of Kalahandi district could be connected to the fact that majority of the respondents from Kalahandi said that they faced hardship in using these tools (74.5%). The corresponding percentage was lower among the respondents of Kandhamal (47.1%). At an overall level, more than half of the respondents (57.4%) expressed that they face hardships in using the agricultural tools.



Most of the respondents (64.0%) believed that the use of agricultural tools / implements has increased the productivity and production of the crops. The proportion of such respondents was more in Kandhamal (71.8%) than Kalahandi (51%). This could be another reason behind the increased usage of agricultural tools in Kandhamal district than Kalahandi. Nearly eight out of ten respondents (77.2%) also believed that the use of implement had saved their time. The saved time was mainly devoted in household chores (91.4%) and in the caring for children, the old and the sick members of the household (66.7%). Close to one-third respondents also mentioned that they could take more rest due to the use of the implements.

Figure 19 Is time saved by use of agricultural implements (%)



*We save our time by using these modern agricultural tools/ implements and we utilize this time for our family.
IDI, Kandhamal*

Table 34 Change in agricultural productivity due to the use of tools

Particulars	Total	Kalahandi	Kandhamal
Base (all LST HH using agricultural tools)	136	51	85
Yes. The production and productivity has increased	64.0	51.0	71.8
No. The production and productivity has declined	27.2	37.3	21.2
Don't know/Can't say	8.8	11.8	7.1

Three out of ten beneficiaries (29.3%) mentioned that they had received any training on operation and maintenance (O&M) of any labour saving implement.

Table 35 Received training on operation and maintenance of labour saving implement

Particulars	Total	Kalahandi	Kandhamal
Base (all LST HH)	150	60	90
Yes	29.3	6.7	44.4
No	70.7	93.3	55.6

Practice of demonstrating the use any type of labour saving technologies to your fellow farmers was reported by more than one-third respondents (36.7%). The beneficiaries of Kandhamal were more proactively involved in demonstrating the use of technologies to fellow farmers (54.4%) than Kalahandi (10%). The two key institutions contacted for troubleshooting of the

CARE India (TARINA) provides training through SHGs on handling the equipment/ machines and its day to day Operations and maintenance (O&M). The frequency of such trainings is once in 6 months.

DI, Kandhamal



agricultural tools were 'department of agriculture' (60%) and 'CARE INDIA / TARINA project' (42%). Less than two out of ten respondents (16.0%) at an overall level mentioned about availing any government subsidy in buying the equipment. The associated percentages were higher in Kandhamal (21.1%) than Kalahandi (8.3%). When asked if they would like to buy the implement in full cost from the market, close to one-fourth (24.0%) respondents asserted to any such intention and a majority [more than three-fourth (76.0%)] denied any such intention. No district wise variation in this trend was observed. In none of the households interviewed under LST category, we found the respondent to be a fabricator. Hence, the associated percentages of the question related to fabricator could not be ascertained.

One-fifth beneficiaries visited open lab demonstrations for seeing and learning about the drudgery reduction (21.3%). Visits to such session was mainly in Kandhamal where close to one-third respondents (32.2%) than In Kalahandi where most of the respondents (95%) denied visiting such sessions.

Table 36 Visit to open lab demonstrations for seeing and learning about drudgery reduction

Particulars	TOTAL	Kalahandi	Kandhamal
Base (all LST HHs)	150	60	90
Yes	21.3	5.0	32.2
No	78.7	95.0	67.8

When asked about the different drudgery reduction and women friendly technologies and practices which have been currently identified, overall, nine out of ten (92.0%) respondents reported 'sickle' and 'kodi', more than eight out of ten (84.7%) respondents reported 'plough', seven out of ten (73.3%) respondents reported 'land leveller', around two-third of the respondents reported 'winnower' (69.3%), 'manual seed drill' (66.7%) and 'phauda' (65.3%), and half of the (50.0%) respondents reported 'rake'. The numbers corresponding to other techniques were low to be reported.

Overall, more than one-third of the respondents (35.3%) indicated that they had been consulted in identification of suitable drudgery reduction and women friendly technologies. Such consultation was higher in Kandhamal where, more than half of the respondents (52.2%) reported to have received such consultation. Whereas in Kalahandi, most of the respondents (90.0%) denied any such consultation.

As indicated earlier, the visits to open air demonstration sessions were primarily reported in Kandhamal district and most of the respondents from Kalahandi did not visit open lab demonstration sessions. Hence, the associated findings have been reported in context of the respondents from Kandhamal. Among those respondents who visited these sessions, more than seven out of ten have adopted kodi (75.9%), plough (72.4%) and sickle (72.4%), about two third reported adoption of land leveller (65.5%) and manual seed drill (65.5%) and more than five out of ten respondents adopted phauda (58.6%) and winnower (51.7%). Respondents primarily preferred manual technologies over powered technologies.

At an overall level, one-third (35.3%) respondents mentioned that the Farmer Field School (FFS) sessions have helped them in identifying and prioritizing critical intervention components. Difference in



the district wise figures was observed and while close to half of the respondents of Kandhamal (46.7%) found it helpful, the corresponding numbers were low in Kalahandi (18.3%).

The role of women SHGs in allocating identified work between themselves and to their women team members regarding drudgery reduction, at an overall level, was mentioned by close to half of the respondents (47.3%). Also, the right to decide about including or excluding the positive or negative deviant behaviour by fellow SHGs/SHG members and by men was reported by almost five out of ten respondents (48.7%) and more than four out of ten (43.3%) respondents. District wise variation in these SHG related indicators was observed and Kandhamal had comparatively better statistics in comparison to Kalahandi.

At an overall level, almost two-third of the respondents (64.7%) reported that discussion among men and women about better food utilisation had happened in their household. A difference was observed in the value of this indicator within the two districts. While close to half respondents (48.3%) from Kalahandi indicated about such discussion, in Kandhamal, the associated percentage was more than three-fourth (75.6%). More than half of such respondents (54.6%) said that they had shared these discussion in their FFS session with other households. The respondents from Kandhamal being more involved (66.2%) in such discussions than those of Kalahandi (27.6%).

Overall, more than one-third of the respondents (36.7%) had bought drudgery reducing equipment. One-third respondents (35.3%) had taken drudgery reducing equipment on rent. More than half of the (56.6%) respondents reported that service provider and about one-third of the (39.6%) respondents reported that SHG decided the rent of the equipment. Similarly, more than half of the (54.7%) respondents reported that service provider while four out of ten respondents reported that SHG are managing the demand and taking payments.

At an overall level, almost six out of ten (58.0%) respondents mentioned that farmers from different social strata / communities were given equal weightage in accessing services. While in Kalahandi, one-third respondents (33.3%) indicated this, in Kandhamal close to three-fourth respondents mentioned about it (74.4%).

More than four out of ten (42.7%) respondents mentioned that drudgery reduction related FFS sessions focused on women related issues. Data indicated that this was more common in Kandhamal where more than half of the respondents (56.7%) asserted to it as compared to Kalahandi where the associated percentage was low and was 21.7%.

Promoting utilisation of existing equipment for drudgery reduction was mentioned by two third of the respondents (67.3%). The corresponding proportion was higher in Kandhamal (71.1%) than in Kalahandi (61.7%). The promotion of best practice and techniques of equipment usage was mentioned by two-third of the (68.3%) respondents at an overall level.

Four out of ten (40.0%) respondents reported that FFS sessions shared parameters to measure effectiveness. The corresponding proportion was more in Kandhamal (46.7%) than in Kalahandi (30.0%). Primarily the parameters were cost of ownership (31.3%), optimal usage (30.0%), basic care (29.3%) and maintenance (36.7%).



More than one-fourth (26.0%) respondents were aware about the institutes which were specifically supporting the adoption and promotion of different drudgery related equipment. The corresponding proportion was higher in Kandhamal (34.4%) than in Kalahandi (13.3%). On an average, respondents were aware about one institute. Almost eight out of ten (79.5%) respondents reported that inputs of the meetings with such institutions and their experts have been shared with them.

Knowledge about government schemes supporting labour saving technologies among the households was observed to be low and less than one-fifth respondents (17.3%) were aware about any such government schemes. The awareness was higher among the respondents of Kandhamal (23.3%) than Kalahandi (8.3%). On an average, the respondents were aware about one government scheme.

Overall, about half of the respondents (49.3%) indicated that equipment users were interested in investing in equipment. When asked about the kind of investment, primarily the responses were 'investments for personal and public (rental) usage' (50.0%), 'investments only for personal usage' (47.3%) and 'investments only for public (rental) usage' (2.7%).



9. Post-Harvest Management

Post harvesting management is the stage of crop production immediately following harvest including cutting, drying, grading, stacking, threshing, cleaning and packing of the produce. These practices are one of the important aspects of securing food grains from degenerating and securing it from the insect and bug infestation which may hamper the quality of nutritional value of the food grains.

When asked about the various crops harvested by the participant during the most recent harvest, majority of the respondents had harvested rice (91.3%). This was followed by the vegetables (35.3%) and pulses (34.0) however their comparative proportions were low. The respondents from Kalahandi were more involved in harvesting of pulses while the ones from Kandhamal more harvested vegetables. The following table illustrates the district wise harvest of the crops.

We have harvested less compared to last year because of water scarcity and irregularity of rainfall.

-

DI, Kandhamal

Table 37 Different crops harvested by the participants

Particulars	Total	Kalahandi	Kandhamal
Base (all PHM HH)	150	64	86
Rice	91.3	95.3	88.4
Vegetables	35.3	25.0	43.0
Pulses (Kandula, Green Gram, Black gram)	34.0	50.0	22.1
Maize	18.0	14.1	20.9
Millet	4.7	7.8	2.3
Groundnut	3.3	6.2	1.2

When asked about the different practices of PHM, the respondents primarily were involved in 'cleaning' (95.3%), 'stacking' (93.3%), 'cutting' (92.0%) and 'drying' (90.7%). Use of such practices was comparatively more among the beneficiaries of Kandhamal than Kalahandi, as could be seen from the below table.

The names of these PHM practices also came up during the qualitative discussion. As mentioned by the beneficiary, various practices viz. cutting, drying, grading, stacking, threshing, cleaning, packing in bags, milling techniques were being primarily used by the farmers in their area.

Table 38 Practices being used in the Post-Harvest Management

Particulars	Total	Kalahandi	Kandhamal
Base (all PHM HH)	150	64	86
Cleaning	95.3	92.2	97.7
Stacking	93.3	90.6	95.3
Cutting	92.0	84.4	97.7
Drying	90.7	81.2	97.7



Particulars	Total	Kalahandi	Kandhamal
Grading	85.3	78.1	90.7
Threshing	80.7	62.5	94.2
Packing in bags	80.7	82.8	79.1
Milling	71.3	54.7	83.7

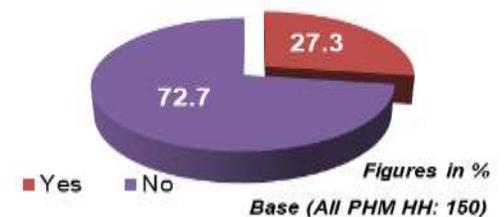
The respondents were also asked about the awareness and use of various techniques as a part of the post-harvest. The associated percentages have been depicted in the below table. The most common technique about which the awareness existed was 'sun-drying' (89.3%) and 'periodic supervision of quality standards' (52.0%). Among other techniques, proper ventilation of storage area (46.7%), limiting the moisture content (45.3%) and storage structures – shelf for drying (45.3%) were the ones about which the respondents were aware of. Majority of the respondents who were aware about the techniques were observed to be using them in their farm land as a part of the post-harvest measure.

Table 39 Awareness about various techniques of Post-Harvest Management

Particulars	Total	Kalahandi	Kandhamal
Base (all PHM HH)	150	64	86
Sun-drying	89.3	84.4	93.0
Periodic supervision of the quality standards	52.0	50.0	53.5
Proper ventilation in the storage area	46.7	39.1	52.3
Limiting the moisture content in the crops	45.3	37.5	51.2
Storage structures- Shelf for drying	45.3	50.0	41.9
Installation of storage stands/raised bed to avoid the storage of the produce on floor	43.3	25.0	57.0
Use of storage bins (metal or bamboo)	43.3	25.0	57.0
Use of hermetic bags (GrainPro bags)	22.7	26.6	19.8
Availing cold storage facility/ practicing small scale refrigeration	22.7	9.4	32.6

At an overall level, more than one-fourth participants (27.3%) mentioned that they had received any training on the improved storage of pulses, grains and vegetable seeds. The topics covered in these trainings were reported to be 'Sun-drying' (95.1%), 'limiting the moisture content in the crops' (78.0%) and 'storage structures' (68.3%). **CARE INDIA / TARINA project was the key source of such trainings and majority of the respondents indicated that they have received the training by CARE INDIA / TARINA project team.** Receiving the trainings during the last three months and during the last six months was the most commonly received response when asked about the duration when the training was received. During the qualitative discussions, participants mentioned that the trainings were very helpful. Also,

Figure 20 Received training on improved storage (%)



they expressed that these trainings should be made more frequently and must be organized on a monthly basis. The prominence of CARE India in imparting trainings came up during qualitative discussions too.

Through the CARE INDIA's interventions women are getting trained on farming, goat and poultry bird rearing. They are being on trained how to use modern agricultural techniques, how to be self-confident etc.

- Participant FGD

Four out of ten beneficiaries were aware about the recommended moisture content of their crops. The awareness was more among the respondents from Kandhamal (51.2%) than Kalahandi (25%). The ones who were aware about the moisture content were mainly storing the grains, pulses and vegetable seeds as per the recommended moisture content (88.3%). Half of such respondents were trained on the concept and the training was majorly imparted by CARE INDIA / TARINA project team (90.3%).

Less than one-fourth respondents (23.3%) knew about the concept of Fair Average Quality (FAQ) of pulses, grains and vegetable seeds. Majority of the ones (91.4%) who were aware about FAQs, were maintaining it. Close to three-fourth (71.4%) of the respondents who were aware about FAQs received a training on maintaining FAQs in pulses, grains and vegetable seeds. The training was comparatively higher in Kandhamal (88.0%) than Kalahandi (30.0%). The role of CARE INDIA / TARINA project was evident as more than eight out of ten respondents (84.0%) who had received a training on FAQ, indicated that the training was provided by CARE INDIA / TARINA project team. During qualitative discussions too respondents indicated that awareness about the concept of FAQ among them and their fellow farmers was developed through the trainings provided by CARE team.

The opinion of respondents regarding the effect of an improper PHM on the pricing, taste deterioration, food quality or nutrition was also captured. The below table presents the associated data trends corresponding to the various statements. As could be seen, a negative impact of the improper PHM was observable on all the aspects viz. pricing, taste deterioration, food quality and nutrition. The associated trends were similar across both the districts.

Table 40 Effect on improper PHM on pricing, taste deterioration, food quality and nutrition

Particulars	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	Total					Kalahandi					Kandhamal				
Base (all PHM HHs)	150					74					76				
St. 1	3.3	60.7	14.7	14.7	6.7	7.8	45.3	21.9	18.8	6.2	0.0	72.1	9.3	11.6	7.0
St. 2	6.7	32.7	22.7	27.3	10.7	15.6	35.9	26.6	17.2	4.7	0.0	30.2	19.8	34.9	15.1
St. 3	5.3	30.0	36.7	19.3	8.7	12.5	39.1	28.1	14.1	6.2	0.0	23.3	43.0	23.3	10.5
St. 4	4.0	36.0	37.3	16.7	6.0	9.4	42.2	28.1	14.1	6.2	0.0	31.4	44.2	18.6	5.8

St. 1: Improper PHM of grains and vegetables/fruits reduces the pricing of the produce

St. 2: Improper PHM of grains and vegetables/fruits leads to taste deterioration of the produce

St. 3: Use of improperly PHM grains and vegetables/fruits reduces the food quality

St. 4: Use of improperly PHM grains and vegetables/fruits impacts the nutrition levels of the household member



10. Household characteristics

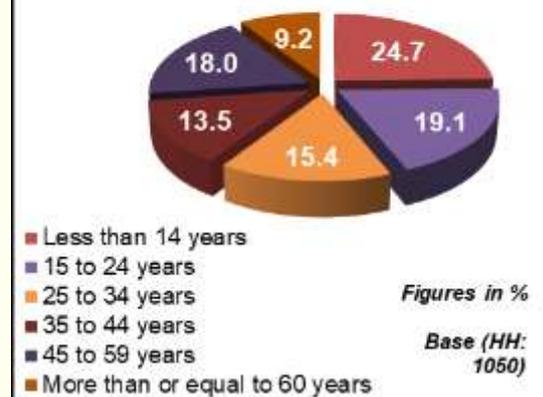
This sub-section presents detailed household level characteristics of the surveyed respondents. Considering that during TBS, the required household information was collected from the beneficiaries hence, as a part of the current survey, the detailed household level information was only collected from non-TBS households.

10.1. Household size and characteristics of the members

A total of 600 non-TBS households covering a population of 2530 were visited and at the household level, the information was collected on age, sex, education and occupation for the members. The mean family size of the surveyed household was 4 (S.D = ±1.65). As written earlier in the report, all the interviews were done with the female respondents. More than three-fourth (79.3%) of the sampled households had a family size of less than or equal to 5 members. One-fifth households (20.5%) had 6 – 10 members in their family. Analysis of the data by gender indicated that an equal proportion of male and female family members were present in the surveyed households (male: 50.4%; female: 49.6%).

The mean age of household members upon analysis came out to be 30.5 years. The adjacent figure shows the proportions of different age groups of the household members in the sampled population. As illustrated, a high percentage of the household members were less than 14 years of age (24.7%). This was followed by the ones who were in the age group of 15-24 years (19.1%) and the ones who were in the age group of 45-59 years (18.0%). One out of ten household members was more than or equal to 60 years (9.2%).

Figure 21 Age distribution of HH members (%)



Close to two-third of the household members (61.3%) were 'currently married' while one-third of the members were reported to be unmarried (32.7%). A very few percentages were widowed/separated/divorced (4.5%).

Question related to highest standard of completed education was administered to all the members who were aged more than five years of age on the date of survey. Close to one-third of the members were illiterate (32.5%). Mostly the years of completed education were either between nine to twelve years (25.7%) or between one to five years (23.9%). Very low percentages reported being educated beyond 12 years (3.7%).

Farming was the most commonly reported primary occupation (40.2%) of the members. When asked about the secondary occupation, the respondents mainly indicated it as 'involved in the household chores' (41.2%).



10.2. Household income, expenditure and ration card

To gauge the persisting household income levels, we asked the respondents about their annual household income from various sources viz. sale of agricultural produce/ sale of livestock or dairy produce/ sale of forest produce/ income from daily agricultural wage labor/ income from participation in MGNREGA/ income from non-farm employment/ remittances/ pension or any other sources. The average annual income of the households came out to be INR 26,913.59. Income from working as a daily agricultural wage labour was the most prominent source (annual average = INR 9,340.6) followed by the income from sale of agricultural produce (annual average = INR 9,013.0) and income from non-farm employment (annual average = INR 2,892.3).

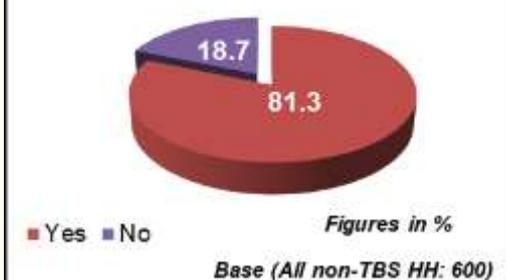
Farming plays a vital role towards livelihood opportunity in the area. We depend on farming. In my village, mostly the farmers are small scale farmers and very few large-scale farmers work.

DI, Kalahandi

The average monthly household expenditure upon computations came out as INR 2,371.6. Maximum spending in a household was on cereals (rice, wheat, maize etc.) (average monthly expenditure = INR 873.8) following by the expenditure on fruits and vegetables (average monthly expenditure = INR 511.6) and on pulses (average monthly expenditure = INR 356.7).

More than eight out of ten non-TBS households had a ration card (81.3%). Households with a ration card were comparatively more in Kandhamal (86.1%) than Kalahandi (77.5%). When asked about the color of the ration card, most of the respondents mentioned it to be 'green' (85.2%). While the trend remained same across both the districts, particularly in Kalahandi, close to one-fifth respondents (17.8%) indicated that their household had a 'red / pink' ration card (17.8%).

Figure 22 HHs with a ration card (%)



10.3. Households and their link with the Public Distribution System (PDS)

Procuring of the cereals (rice and/or wheat) from PDS was observed to be a frequent practice and at an overall level, more than nine out of ten households (94.5%) had made such purchase during the last one month. High satisfaction from the quality of rice and/or wheat provided by PDS was existing among the respondents and overall, 95% respondents expressed satisfaction. Similar trends in the satisfaction percentage were also seen with the variety of foods provided through the PDS (89.3%). No significant district wise variation was observed in all these indicators and the data from Kalahandi as well as Kandhamal had similar trend. When asked about the preference of purchasing various food items from PDS, the respondents indicated maximum affinity towards purchasing pulses (91.2%) and vegetables / fruits (74.4%). Primarily, the use of PDS was observed to be in ensuring a year-round supply (93.6%), to ensure more affordable food i.e. cheaper than the market rates (78.9%) and in ensuring an access to a set of diverse / healthy food (71.5%).



10.4. Dietary patterns in the households

On an average, the households were cooking food two times in a day (S.D = ±0.33). One out of ten households (11.8%) reportedly cooked food thrice per day. The average number of times per day when the respondents or their spouse or their children were eating meals at home was three [S.D (respondents) = ±0.46; S.D (spouse) = ±0.55; S.D (children) = ±1.04].

Data indicates that when the families of the surveyed households sat for eating the food, it was first served to the male children (aged between 0 to 17 years) [32.5%]. This was followed by serving to the male elderly members (aged 60 years or more) [26.0%] and serving the female children (aged between 0 to 17 years) [20.0%]. A small variation in the associated trends was observed across the districts, as could be seen from the below table.

Table 41 Serving of the food to the household members

Particulars	Total	Kalahandi	Kandhamal
Base	1050	559	491
Male elderly (Aged 60 years or more)	26.0	16.5	38.0
Female elderly (Aged 60 years or more)	4.8	1.8	8.6
Male adult (Aged between 18 years to 59 years)	11.7	10.5	13.2
Female adult (Aged between 18 years to 59 years)	3.3	4.2	2.3
Male child (Aged between 0 to 17 years)	32.5	40.1	22.9
Female child (Aged between 0 to 17 years)	20.0	24.0	15.0
Guests	1.7	3.0	0.0

To further gauge the eating behaviours of the members of the surveyed households, we asked the respondents about the different foods which the household members and the respondents eat during a normal day. The reference was taken of the previous day / night if it was reportedly a normal day or of the day before if the previous day was not a normal day. The response was first captured spontaneously and depending on the response, the remaining food categories were later probed. Eating of the foods belonging to the category of porridge, bread, rice, noodles, or other foods made from grains was the most common spontaneously reported response (HH members: 92.1%; Respondent: 92.5%) which was followed by the food belonging to the category containing white potatoes, white yams, manioc, cassava, or any other foods made from roots (HH members: 75.2%; Respondent: 76.3%). Among other food categories mentioned spontaneously, any foods made from beans, peas, lentils, nuts or seeds (HH members: 37.2%; Respondent: 36.7%), any dark green leafy vegetable (HH members: 31.0%; Respondents: 30.5%) and any other vegetables (HH members: 30.0%; Respondents: 29.8%) were primarily reported.

Yes, there has been a change in the consumption patterns of vegetables/green leaf/fruits among the households of our village over the last few years. The consumption of vegetables / green leaf / fruits has increased. CARE INDIA's interventions are the trigger behind the change.

- Participants FGD

By referring the different quarters of the last year i.e. January – December 2016, the respondents were asked if they had consumed food items belonging to different food group categories. It was observed



that cereals/grains, lentils/pulses and oil/salt was reportedly consumed by more than nine out of ten households and the consumption trend was similar across different quarters with no significant difference.

When the respondents were asked if they or any other members of their household had accessed the food from various sources, it was observed that the access was primarily from the PDS (64.8%). Around one-fourth respondents also indicated the access from the meals at the Anganwadi centres (22.8%), mid-day meal at the government schools (25.7%). In less than two out of ten households, the access was reported from the take home ration packets from the Anganwadi centres (16.8%). The associated data trends across both the districts remained nearly same.

While the availability of the food items in abundance in the present season was not observed to have affected the consumption, data indicated that the household consumption would be influenced by the affordability i.e. the market pricing and would be more if the prices of the commodities fell.

10.5. Women participation in the labour force and local community groups

An active participation of women was noticed as the labour force. The qualitative discussion indicated that particularly during the last four years, the women have actively started taking up the roles and activities in the labour force. The table below presents the associated trends about working of women in their own or leased farm, as a daily wage agricultural laborer and as non-farm wage earner. As could be seen, primarily, women worked during the Kharif season. While the respondents from Kalahandi primarily reported working in their own or leased farm, the ones from Kandhamal worked mainly as an agricultural laborer.

Yes, over a period, women have started taking up activities and roles which were traditionally considered suitable only for men. This change has happened within the last 4 years.

- Beneficiary FGD

Table 42 Women involvement in the labour force and association in the local community groups

Particulars	Total	Kalahandi	Kandhamal
Base	1050	559	491
Do you work on your (own or & leased in) farm in Kharif season?	74.5	78.1	69.9
Do you work on your (own or & leased in) farm in Rabi season?	71.5	74.6	67.7
Do you work on your (own or & leased in) farm in Zaid season?	47.2	50.3	43.2
Do you work as daily wage agricultural labour in Kharif season?	59.2	53	66.9
Do you work as daily wage agricultural labour in Rabi season?	54.0	45.2	65.0
Do you work as daily wage agricultural labour in Zaid season?	34.5	32.0	37.6
Do you work as non- farm wage earner?	45.0	37.1	54.9



Particulars	Total	Kalahandi	Kandhamal
Base	1050	559	491
Do you own any agricultural land in your name?	30.8	34.7	25.9
Do you have a bank account in your name?	68.2	54.5	85.3
Are you a member of any community group?	40.5	21.3	64.7

Close to one-third respondents (30.8%) indicated that they have agricultural land in their name. The corresponding percentages were higher in Kalahandi than in Kandhamal. More than two-third respondents had a bank account in their name (68.2%) and district wise variations existed in the associated percentages (Kalahandi: 54.5%; Kandhamal: 85.3%). At an overall level, four out of ten respondents (40.5%) indicated that they were a member of any community group. Association with the community groups was more among the respondents from Kandhamal (64.7%) than Kandhamal (21.3%). Self-help group (SHG) was the community group with which the maximum proportion of the respondents were associated with, as could be seen from the data indicated in the below table.

Table 43 Association with a community group

Particulars	Total	Kalahandi	Kandhamal
Base	443	171	272
Self-Help Group	98.4	97.2	98.8
Panchayat	2.5	5.6	1.2
Village level committee	4.5	5.6	4.1

The respondents who were associated with SHGs were asked few questions to ascertain the level of association with their group. Data indicated that the SHGs with which the respondents were associated with were primarily promoted by the banks / financial institutions (57.7%) or by the government department (28.9%). At an overall level, more than four out of ten respondents reported an association of less than or equal to 12 months (42.2%). However, considering that few respondents were associated since long with the SHGs, an average association of the respondents came out to be four and half years (53 months). On an average, the SHGs were reported to be of 12 members. One-fifth (20.5%) of the surveyed respondents were a portfolio holder in the SHG and more than half of such respondents (53.1%) indicated that they were 'president'. Monthly meetings of the SHG group was predominantly reported by a majority (81.6%). Two out of ten respondents also indicated that their groups met bi-monthly (17.2%). At an overall level, attending the training through SHG was reported by four out of ten respondents (41.8%) and training was primarily on agriculture activity (80.0%), livestock activity (56.0%) and kitchen gardening (52.0%). A high percentage of the respondents (72.8%) carried a belief that they have learned new skills after joining the SHG.

10.6. Hand washing and sanitation

Hand washing

Hand washing if properly followed, has many important health benefits in community settings. To access the hand washing practices at the household level, respondents were first asked if they generally wash their hands with soap during a typical day. The ones who indicated that they use soap for hand washing were further asked about the instances of hand washing and what was being used by them for hand washing.

At an overall level, close to seven out of ten respondents (69.3%) indicated that they were generally washing their hands with soap during a typical day. However, a stark difference in this indicator was observed among the respondents of the two districts. While the ones belonging to Kandhamal primarily



indicated practicing this behaviour (95.5%), less than half of the respondents from Kalahandi mentioned about it (48.5%). At the time of the interview, soap was almost universally present such households (99.1%) and our interviewers could see the soap in more than nine out of ten such households (94.5%).

Table 44 Hand washing with soap

Particulars	Total	Kalahandi	Kandhamal
Base	1050	559	491
Yes, wash hands with soap during a typical day	69.3	48.5	95.5
No, do not wash hands with soap during a typical day	30.7	51.5	4.5

The three typical instances during a day when the respondents reportedly washed their hands with soap were 'after using the toilet' (87.0%), 'after cleaning utensils' (60.1%) and 'before eating' (58.4%). The associated trends of hand washing during other such instances of the day could be seen in the below table.

Table 45 Instances of a day during which respondents typically wash their hands

Particulars	Total	Kalahandi	Kandhamal
Base	716	262	454
After using the toilet	87.0	80.2	91.3
Before cooking	30.8	22.2	36.2
After cooking	23.8	19.8	26.4
Before eating	58.4	45.7	66.5
Before praying	9.4	5.6	11.8
Before feeding the infant	20.4	13.0	25.2
After cleaning infant feces	27.9	33.3	24.4
After dusting/ sweeping/ mopping	25.5	29.0	23.2
After touching pets or handling animals and their waste	21.9	22.2	21.7
After blowing nose or coughing	19.2	17.3	20.5
After cleaning utensils	60.1	57.4	61.8

Sanitation:

In more than eight out of ten non-TBS households (85.5%), the general appearance around the household or in the compound was categorized as 'clean'. The associated percentages being high in Kandhamal (94.4%) than in Kalahandi (78.4%). This was an observation based question and interviewers recorded a response based on their understanding. Primarily, 'animal droppings' (70.1%) and 'garbage (open garbage can / garbage on the ground)' (52.9%) were reportedly observed in such households where surroundings were indicated as not clean by the interviewers.

When asked about the access to the toilet facilities, more than half of the respondents (53.9%) indicated that their household had access to a toilet (either own toilet or a shared toilet or a public / community toilet). The associated percentages were higher in Kandhamal (78.3%) than in Kalahandi (34.4%). These percentages were in line with the individual household toilet data of these two districts uploaded on the Swachh Bharat Mission's website. At an overall level, among the households which had access to a toilet facility, access to their own toilet was reported in close to half (46.5%).



Table 46 Access to a toilet facility

Particulars	Total	Kalahandi	Kandhamal
Base	1050	559	491
Own toilet	46.5	32.0	64.7
Shared toilet	5.7	1.2	11.3
Public/Community toilet	1.7	1.2	2.3
Household do not have access to toilet facility	46.2	65.6	21.8

Primarily, the households had access to a functional toilet (85.4%) and four out of ten respondents (40.9%) indicated that everyone in their household used toilet on a regular basis. Seven out of ten households (70.3%) indicated that they normally use a toilet while going for defecation. Season specific toilet usage was also recorded as a part of the questionnaire and the respondents were asked the key reasons for not using toilets during specific seasons, if the same was reported. The use of toilet was higher in rainy season (85.1%) and winter season (80.5%). Seven out of ten respondents indicated that they usually use toilets in summer season (70.0%). Unavailability of enough water came out as a key reason behind non-usage of toilets in different seasons.

More than one-third respondents (66.3%) indicated that they used toilet on the previous day when they went for defecation. The district wise trends were nearly same for this indicator (Kalahandi: 61.7%; Kandhamal: 68.8%). Scarcity of enough water (36.7%) and missing of some parts of the toilet (34.9%) were the primary reasons quoted behind not using toilet on the previous day.

All the respondents were also asked why few individuals around them preferred open defecation. As could be seen from the below table, 'poverty / costly toilet construction' (60.8%) and 'an associated convenience' (49.5%) were reported to be the key reasons behind preference for open defecation.

Table 47 Reasons why people defecate in open

Particulars	Total	Kalahandi	Kandhamal
Base	1050	559	491
Poverty/It is costly to construct the toilet	60.8	53.9	69.5
It is convenient to go out	49.5	49.7	49.2
Going to toilet is problematic/it is not of a good quality	3.3	3.3	3.4
Been doing so for a long time/everybody does it	21.8	10.2	36.5
Religion/caste prohibitions	1.0	1.8	0.0
Water problem in the toilet	23.0	9.9	39.5
It is said that latrine is harmful for health	2.7	3.0	2.3
It is dark inside/ There is no light.	4.2	5.4	2.6

