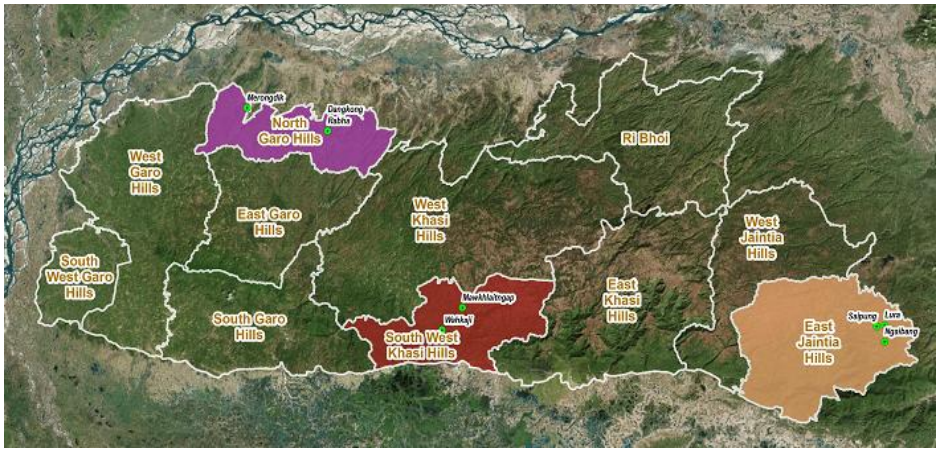
# INTEGRATED WATERSHED MANAGEMENT PROGRAMME (IWMP)
# MEGHALAYA




## REPORT ON BASELINE SURVEY & BENCHMARKING
## (BATCH-V)

**Submitted to:**

Meghalaya State Watershed & Wasteland Development Agency (MSWWDA),

Govt. of Meghalaya

**Submitted by:**

North Eastern Development Finance Corporation Limited (NEDFi)

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# *Acknowledgement*

Baseline characterization builds necessary foundation in effective planning and measuring performance of development projects. Likewise, proper characterization of watersheds is a prerequisite for appropriate policy directions to enhance productivity and sustainable development of the projects under Integrated Watershed Management Programme (IWMP). With such orientation, this Baseline Report has been developed based on the field survey carried out by NEDFi Monitoring team as per scope of work under Monitoring, Evaluation, Learning and Documentation (MEL&D) assignment under Meghalaya State Watershed & Wasteland Development Agency (MSWWDA), State Level Nodal Agency (SLNA-IWMP), Government of Meghalaya.

NEDFi Monitoring team would like to acknowledge with gratefulness the guidance and timely co-operation received from **Shri D. Langstieh, Director, Soil & Water Conservation Department and CEO-MSWWDA,** SLNA-IWMP, Government of Meghalaya for approving the methodology proposed as well as the data collection schedules developed for the field survey.

**Shri W. Rymbai, Additional Director and Shri G. Kharmujai, Joint Director (HQ)** Soil & Water Conservation Department, Government of Meghalaya deserves special appreciation for their valuable suggestions and continuous encouragement extended related to MEL&D activities.

We would like to express our sincere gratitude to **Smt. C. S. Thabor, AS&WCO and Expert-MSWWDA** for overall liasioning support to the Monitoring team.

We remain grateful to all the Divisional Officers (DOs), Assistant Soil & Water Conservation Officers, Range Officers and Field Demonstrators of Soil & Water Conservation Department, Govt. of Meghalaya for facilitating, co-ordinating and providing logistical support during the field survey.

The extensive field data collection would not have been possible without the co-ordination of all the Technical Experts (TEs)/Watershed Development Team (WDT) members involved in the survey work for their vital efforts in conducting the Village as well as Household survey across the difficult terrains to collect the quality data presented in this report. Hence a special thanks to them for their invaluable assistance.

Finally, we are thankful to all the Secretaries/Presidents of Watershed Committees, all the Village Headman, all the 627 (Six Hundred and Twenty Seven) respondents for household survey representing 40 (Forty) Villages, 10 (Ten) Project locations and 8 (Eight) districts of Meghalaya for graciously sharing their knowledge, experience and sparing their time by participating in the survey, which made this Baseline Report possible.

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**Guwahati.**

# LIST OF ACRONYMS & ABBREVIATIONS

| Acronym/ Abbreviation | Full Form |
|---|---|
| ATM | Automated Teller Machine |
| BPL | Below Poverty Line |
| CV | Control Village |
| DoLR | Department of Land Resources<br>(Department under the Ministry of Rural Development, Government of India) |
| Ha | Hectare |
| HYV | High Yielding Variety |
| IDM | Integrated Disease Management |
| INM | Integrated Nutrient Management |
| IPM | Integrated Pest Management |
| IWMP | Integrated Watershed Management Programme |
| Kg | kilogram |
| LR | Lower Reach |
| m | Metre |
| MCAB | Meghalaya Cooperative Apex Bank |
| MEL&D | Monitoring, Evaluation, Learning and Documentation |
| MGNREGS | Mahatma Gandhi National Rural Guarantee Scheme |
| MHIS | Meghalaya Health Insurance Scheme |
| MR | Middle Reach |
| MRB | Meghalaya Rural Bank |
| MSWWDA | Meghalaya State Watershed & Wasteland Development Agency |
| N | No |
| NEDFi | North Eastern Development Finance Corporation Ltd. |
| NTFP | Non Timber Forest Product |
| PHE | Public Health Engineering (a Department of the Government of Meghalaya) |
| Rs. | Rupees |
| SD | Standard Deviation |
| s.d. | Standard Deviation |
| SHG | Self Help Group |
| SLNA | State Level Nodal Agency |
| ST | Scheduled Tribe |
| UG | User Group |
| UR | Upper Reach |
| WC | Watershed Committee |
| WCDC | Watershed Cell cum Data Centre |
| WDT | Watershed Development Team (Project Implementing Agency) |
| Y | Yes |

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# EXECUTIVE SUMMARY

## *Integrated Watershed Management Programme*

The Integrated Watershed Management Programme (IWMP) is being implemented under the aegis of the Department of Land Resources (DoLR), Ministry of Rural Development, Government of India. The main objectives of the above programme include restoring the ecological balance by harnessing; conserving and developing degraded natural resources such as soil, vegetative cover and water. The programme intends to achieve outcomes like the prevention of soil run-off, regeneration of natural vegetation, rain water harvesting and recharging of the ground water table. It has been envisaged that the above measures would enable multi-cropping and the introduction of diverse agro-based activities in order to provide sustainable livelihoods to the people residing in the watershed areas.

Along with the other states of India, the above programme, viz. IWMP, is being implemented in the state of Meghalaya. The Meghalaya State Watershed & Wasteland Development Agency (MSWWDA), an organization formed by the Soil & Water Conservation Department of Government of Meghalaya, is executing the programme in this state as the State Level Nodal Agency.

## *Monitoring, Evaluation, Learning and Documentation*

The IWMP is a more diverse and inclusive programme compared to its predecessors. In view of the large expenditure and the needs of the people that the programme seeks to address, it becomes imperative to ensure accountability and set minimum standards of performance and achievements for the public investment. This is sought to be done by taking initiatives to establish a well designed and functional system for Monitoring, Evaluation, Learning and Documentation (MEL&D). Apart from indicators designed to assess the performance of soil and water conservation activities, the outcomes in the environmental, economic, agricultural and allied fields have to be covered by the development of indicators, benchmarks and performance targets. In Meghalaya, the above structure has been followed for the successful execution of the programme in the state.

## *Baseline Survey of IWMP Batch-V Projects in Meghalaya*

At the outset of the implementation of IWMP in the state, a Baseline Survey is required to be conducted in the sampled watersheds. In Meghalaya, the work for the above-mentioned Baseline Survey was commenced in February 2016 by North Eastern Development Finance Corporation Ltd. (NEDFi), which is involved as the MEL&D Agency for the SLNA in the state. Thereafter, the entire exercise consists of the following steps:

(a) Desk Review and Study of Secondary Data;

(b) Developing Pilot Survey Schedule;

(c) Field Testing of Survey Schedules;

(d) Finalization of Survey Schedule;

(e) Data Collection as per sample methodology (Field Survey & Focus Group Discussion);

(f) Data Entry & Tabulation;

(g) Data Analysis;

(h) Preparation of Draft Report; and

(i) Finalization of Report.

The design and implementation of the study has been discussed as follows.

### *Survey Methodology*

The sampling strategy used in the present Baseline Survey for IWMP in Meghalaya **(Batch-V)** is based on the framework prescribed by the Department of Land Resources (DoLR), Ministry of Rural Development, Government of India. The steps involved in the process are given below:

(a) **Selection of Projects:** In the present instance, the Baseline Study covered 25% of the batch-wise projects. In other words, around one-quarter of the projects taken up under **Batch-V** were taken up under the present exercise.

(b) **Selection of Villages:** The selection of villages to be covered in the Baseline Survey was done as given below.

**Project Village:** In each project, three villages were taken up for the study. One of these villages was located in each of the Upper Reach (UR) or ridge, Middle Reach (MR) and Lower Reach (LR) or Valley of the watershed covered under the project.

**Control Village:** Some of the villages in the untreated area with similar ecological and socio-economic conditions will be taken up under the above study as the 'control sample'. Comparison of the variation of the indicator values in the project villages against the variation in the same indicators in the 'control sample' will enable the better assessment of the programme impacts.

(c) **Sampling of Households:** Under the present Baseline Survey in Meghalaya, the sampling of households in the selected villages was done in the following manner in the project villages and control village:

**Project Villages:** 20% of the households staying in the selected project village; and

**Control Villages:** 50% of the households living in the selected village taken as 'Control Village.

(d) **Administration of Schedules:** Data was collected from the sampled households on the project indicators and other relevant aspects by using Schedules. Copy of the Household Schedule is attached as Appendix-2.

### *List of Selected Project Villages & Control Villages*

The list of selected villages and their location details is given below. This is done separately for the project villages and control villages.

**Table-ES.1: Selected Project Villages (Batch V)**

| District | Block | Project Name | Sampled Village | Location |
|---|---|---|---|---|
| East Jaintia Hills | Saipung | IXMP-I | Saipung | Upper Reach |
| | -Do- | -Do- | Ngaibang | Middle Reach |
| | -Do- | -Do- | Lura | Lower Reach |
| North Garo Hills | Resubelpara | IWMP-IV | Merongdik | Upper Reach |
| | -Do- | -Do- | Samkalak Songma | Middle Reach |
| | -Do- | -Do- | Garo Thorikakona | Lower Reach |
| South West Khasi Hills | Ranikor | IWMP-IV | Wahkaji | Upper Reach |
| | -Do- | -Do- | Mawthabah | Middle Reach |
| | -Do- | -Do- | Langpa | Lower Reach |

**Table-ES.2: Selected Control Villages (Batch V)**

| District | Block | Sampled Village | Control Village for |
|---|---|---|---|
| East Jaintia Hills | Saipung | Bam Khongsi | IWMP-XI |
| North Garo Hills | Resubelpara | Rabha Thorikakona | IXMP-VII |
| South West Khasi Hills | Ranikor | Mawkhlaitngap | IXMP-XI |

### *Key Findings of the Survey*

| Sl. No. | Important Indicators | Findings |
|---|---|---|
| 1. | Household and Land Details | • In the project villages, 51% of the population are Male (Sex ratio is 944 females per 1000 males).<br>• The average of homestead land owned by a household in the project villages is about 0.196 Ha. |
| 2. | Irrigation | • There is no irrigated area in the project villages and control villages as per the present study. |

| Sl. No. | Important Indicators | Findings |
|---|---|---|
| 3. | Drinking Water | • In the project villages, spring water is widely used by the households for drinking water during the dry season period (February- March). |
| 4. | Cooking Fuel | • In the project villages covered by the survey, it is found that 79% of the households collect their cooking fuel whereas 21% of the households purchase their cooking fuel. |
| 5. | Crops Grown | • In the project villages, besides rice the other crops grown under rain-fed conditions are Jhum Crops, Maize, Potato, Turmeric & Ginger, Betel Leaf and Vegetables. |
| 6. | Orchards, Plantation Crops & Agro-Forestry | • As per the survey, it is found that Orange, Areca Nut, Rubber, Jackfruit, Mango and Rubber are found in the project villages whereas only Areca Nut and Rubber are found in the control villages. |
| 7. | Livestock | • No households possess buffaloes in both project and control villages. |
| 8. | Fishery | • There are no areas under fishery in both Project and Control villages under South West Khasi Hills. |
| 9. | Non Timber Forest Product (NTFP) | • As per the survey, Broom cultivation is mostly practised in South West Khasi Hills district whereas Bamboo is grown only in Merongdik, North Garo Hills. |
| 10. | Wage Labour | • Besides MGNREGS, other sources of wage labour includes agriculture, domestic construction etc. in both project and control villages. |
| 11. | Migration | • It is found that total numbers of migrated male members are 58 and female members are 53 under project village, whereas it is 15 for male and 9 for female under control villages. |
| 12. | Income | • It is seen that, households are engaged in different income generating activities like wage labour, agriculture crops, livestock, fishery and NTFP etc for livelihood. |

| Sl. No. | Important Indicators | Findings |
|---|---|---|
| 13. | Assets | • In project village, only 44% owned a television as part of their asset while the remaining 56% do not whereas, in control village only 21% owned while the remaining 79% do not. |
| 14. | Social Capital | • It is found that, almost all the households are citing round the year as the months of self-sufficiency in both project and control villages.<br>• As per survey, North Garo Hills have about 5% and 4% of the households respectively who are members of SHGs in both project and control villages. |
| 15. | Income and Expenditure | • In project villages, the average household income is approx. Rs. 9,692/- per month and average household expenditure is approx. Rs. 4,143/- per month. |

### *Benchmarking*

In terms of implementation of IWMP, benchmarking has been defined as 'a process of setting realistic standards of watershed outcomes by assigning specific values to the indicators identified for this purpose and taking into consideration agro-ecological variation and production processes across the sectors.'

The indicators and benchmarks for the IWMP have been developed and refined in 2015 with the collaboration of domain experts and practitioners from multi-disciplinary areas. Accordingly, the 'Operational Guidelines' on benchmarking of watershed management outcomes has been brought out by the DoLR in 2015. It furnishes the major ecological regions considered for benchmarking. India has been classified into eight such regions based on the factors like Physiography, slope, soil type, forest cover and availability of water resources.

Referring the said 'Operational Guidelines', a review meeting related to Benchmarking was held with the officials of SLNA-IWMP, Meghalaya on 13$^{th}$ February 2017 in presence of the representative officials of PIAs in Shillong. Based on the detail discussions held in the review meeting, the baseline values has been fixed for the identified indicators considering the agro-climatic zone and usefulness to the watershed projects implemented in Meghalaya.

The indicators and benchmarks so finalised are shown in **Page No. 107** under Chapter-4 of this Report.

# 1. INTRODUCTION

## *1.1. Integrated Watershed Management Programme (IWMP)*

The Integrated Watershed Management Programme (IWMP) is a programme of the Government of India, which is being implemented under the aegis of the Department of Land Resources (DoLR), Ministry of Rural Development. The programme was launched in 2009-10 with the main objectives of restoring the ecological balance by harnessing; conserving and developing degraded natural resources such as soil, vegetative cover and water. The programme intends to achieve outcomes like the prevention of soil run-off, regeneration of natural vegetation, rain water harvesting and recharging of the ground water table. It has been envisaged that the above measures would enable multi-cropping and the introduction of diverse agro-based activities in order to provide sustainable livelihoods to the people residing in the watershed areas.

Along with the other states of India, the above programme, viz. IWMP, is being implemented in the state of Meghalaya. The Meghalaya State Watershed & Wasteland Development Agency (MSWWDA), an organization formed by the Soil & Water Conservation Department of Government of Meghalaya, is executing the programme in this state.

Appropriate institutional arrangements have been made at various levels for the effective and professional management of watershed development projects. Dedicated institutions have been established at the different levels with multi-disciplinary experts, as given in the following table.

**Table-1.1: Institutional Structure for Implementation of IWMP at the State Level**

| Level | Institution | Acronym |
|---|---|---|
| State Level | State Level Nodal Agency | SLNA |
| District Level | Watershed Cell cum Data Centre | WCDC |
| Project Level | Project Implementing Agency – Watershed Development Team | PIA-WDT |
| Village Level | Watershed Committee | WC |

It may be noted that the Meghalaya State Watershed & Wasteland Development Agency (MSWWDA) is functioning as the State Level Nodal Agency (SLNA) in the state. WCDCs have been positioned in each district of the state. WDT is functional as the Project Implementation Agency for each project. At the village level, Watershed Committees are functional in the state.

## *1.2. Monitoring, Evaluation, Learning & Documentation (MEL&D) System*

The IWMP is a more diverse and socially inclusive programme compared to its predecessors like Drought Prone Area Programme (DPAP), Desert Development Programme (DDP) and Integrated Watershed Development Programme (IWDP). In view of the large expenditure and the needs of the people that the programme seeks to address, it becomes imperative to ensure accountability and set minimum standards of performance and achievements for the public investment.

This is sought to be done by the following initiatives to establish a well designed and functional system for Monitoring, Evaluation, Learning and Documentation (MEL&D). In Meghalaya, the above structure has been followed for the successful execution of the programme in the state.

**Monitoring**

A participatory, outcome and impact-oriented and user-focused monitoring, evaluation and learning system has been put in place to obtain feedback and undertake improvements in planning, project design and implementation. The programme design recommends that regular monitoring of the projects is to be carried out at each stage. Such monitoring includes process and outcome monitoring. Online monitoring is a feature of all projects. The PIA shall submit quarterly progress reports (countersigned by the Watershed Committee (WC) President) to the WCDC for further submission to the SLNA. The WCDC will have one member exclusively responsible for monitoring.

In Meghalaya, as elsewhere in India, the monitoring of the watershed projects is being done by various mechanisms. These include Internal Monitoring by Project Teams (PIA/ WCDC), Progress Monitoring, GIS / Web Based On-Line Monitoring, Self-Monitoring by communities, Sustainability Monitoring, Social Audits, Independent and External Monitoring by Independent Agencies, etc.

**Evaluation**

A minimum percentage of evaluations and impact studies will be carried out to ensure objectivity as well as to infuse a national perspective. The evaluation will be carried out by SLNA panel of evaluators, selected as per guidelines issued by DoLR. This is planned to be done at the end of the programme.

**Learning**

Systematic efforts are being made by the WDT/WC to learn from the field experiences as also from feedback of independent sources. Different methods had been proposed to enable the learning process at different levels. Such measures are being followed in the state of Meghalaya along with the rest of the country.

**Documentation**

Last activity domain in the MEL&D system is documentation. In any project management structure, documentation occupies a significant share of total activities. System of documentation hardly leaves any space for any missing link in the activity flow chart of project implementation. IWMP envisages all sorts of standard documents and responsibility of documentation is naturally vested upon MEL&D agencies who are expected to be professional experts in the area. Thus MEL&D system has a duel role in documentation. Firstly, it could be logically expected from the agency that appropriate measures to be taken for educating project implementation functionaries at all levels regarding generating and archiving documents. Secondly, the agency at its own shall concurrently generate/collect and archive essential project documents of all major types. Mode of achieving and transmitting project documents is a major decision in determining structure of project management framework.

## *1.3. Baseline Survey of IWMP Batch-V Projects in Meghalaya*

At the outset of the implementation of IWMP in the state, a Baseline Survey is required to be conducted in the sampled watersheds. In Meghalaya, the work for the above-mentioned Baseline Survey was commenced in February 2016 by North Eastern Development Finance Corporation Ltd. (NEDFi), which is working as the MEL&D Agency for the SLNA in the state. Thereafter, the entire exercise consists of the following steps:

(a) Desk Review and Study of Secondary Data;
(b) Developing Pilot Survey Schedule;
(c) Field Testing of survey schedules;
(d) Finalization of Survey Schedule;
(e) Data Collection as per sample methodology (Field Survey & Focus Group Discussion);
(f) Data Entry & Tabulation;
(g) Data Analysis;
(h) Preparation of Draft Report; and
(i) Finalization of Report.

The design and implementation of the study has been discussed in the next section. This Report covers the Baseline Survey and Benchmarking of the project indicators for Batch-V projects. The Baseline Survey results form a part of the impact assessment exercise for the IWMP. A comparison of the fixed benchmark values against the indicators would give an objective idea of the progress and impact of the execution of the programme in the state. It is with this objective that the entire exercise has been taken up to understand the degree of achievement of the project goals and objectives of Batch-V projects implemented under Integrated Watershed Management Programme (IWMP) in Meghalaya.

# 2. SURVEY DESIGN AND METHODOLOGY

## *2.1. Consultation with the Officials at SLNA Level*

Several communications and consultations were carried out with the key officials including CEO-MSWWDA and senior officials of State Level Nodal Agency (IWMP-Meghalaya) at the planning stage of the baseline survey. The purpose of the initiative was mainly to finalise sample project locations, design an appropriate survey methodology, cross-fertilisation of ideas, facilitate experience-sharing and to explore practical solutions to the challenges related to the field survey process.

## *2.2. Methodology adopted for the Baseline Survey*

The sampling strategy used in the present Baseline Survey for IWMP in Meghalaya (Batch-V) is based on the framework prescribed by the Department of Land Resources (DoLR), Ministry of Rural Development, Government of India.

The steps involved in the process are given below:

(a) **Selection of Projects**

In the present instance, the Baseline Study covered 25% of the batch-wise projects. In other words, around one-quarter of the projects taken up under Batch-V were taken up under the present exercise.

The SLNA suggested that the study cover the following projects under Batch-V. The projects are located in different parts of the state, as is evident from a perusal of the following table.

**Table-2.1 Selection of Projects (Batch-V) for Baseline Survey under IWMP in Meghalaya**

| District | Block | Project Name |
|---|---|---|
| East Jaintia Hills | Saipung | IXMP-I |
| | -Do- | -Do- |
| | -Do- | -Do- |
| North Garo Hills | Resubelpara | IWMP-IV |
| | -Do- | -Do- |
| | -Do- | -Do- |
| South West Khasi Hills | Ranikor | IWMP-IV |
| | -Do- | -Do- |
| | -Do- | -Do- |

(b) **Selection of Villages**

The selection of villages to be covered in the Baseline Survey was done as given overleaf.

**Project Village**: In each project, three villages were taken up for the study. One of these villages was located in each of the Upper Reach (UR) or ridge, Middle Reach (MR) and Lower Reach (LR) or Valley of the watershed covered under the project.

**Control Village**: Some of the villages in the untreated area with similar ecological and socio-economic conditions will be taken up under the above study as the 'control sample'. Comparison of the variation of the indicator values in the project villages against the variation in the same indicators in the 'control sample' will enable the better assessment of the programme impacts.

The list of Project Villages and Control Villages taken up for study is given in a tabular format in the following sub-section and may be referred to therein. Appendix-1 gives a map of the state showing the location of the project villages as well as the control villages.

(c) **Sampling of Households**

Under the present Baseline Survey in Meghalaya, the sampling of households in the selected villages was done in the following manner in the project villages and control village:

**Project Villages**: 20% of the households staying in the selected project village; and

**Control Villages:** 50% of the households living in the selected village taken as 'Control Village.

(d) **Administration of Schedules**

Data was collected from the sampled households on the project indicators and other relevant aspects by using Schedules. Copy of the Household Schedule is attached as Appendix-2.

In addition, village level data was sought to be obtained.

## *2.3. List of Selected Projects & Sampled Villages for Baseline Survey*

The list of selected villages and their location details is given overleaf. This is done separately for the project villages and control villages.

**Table-2.2: Selected Projects & Surveyed Villages (Project Villages)**

| District | Block | Project Name | Sampled Village | Location |
|---|---|---|---|---|
| East Jaintia Hills | Saipung | IXMP-I | Saipung | Upper Reach |
| | -Do- | -Do- | Ngaibang | Middle Reach |
| | -Do- | -Do- | Lura | Lower Reach |
| North Garo Hills | Resubelpara | IWMP-IV | Merongdik | Upper Reach |
| | -Do- | -Do- | Samkalak Songma | Middle Reach |

| District | Block | Project Name | Sampled Village | Location |
|---|---|---|---|---|
| | -Do- | -Do- | Garo Thorikakona | Lower Reach |
| South West Khasi Hills | Ranikor | IWMP-IV | Wahkaji | Upper Reach |
| | -Do- | -Do- | Mawthabah | Middle Reach |
| | -Do- | -Do- | Langpa | Lower Reach |

**Table-2.3: Selected Projects & Surveyed Villages (Control Villages)**

| District | Block | Sampled Village | Control Village for |
|---|---|---|---|
| East Jaintia Hills | Saipung | Bam Khongsi | IXMP-I |
| North Garo Hills | Resubelpara | Rabha Thorikakona | IWMP-IV |
| South West Khasi Hills | Ranikor | Mawkhlaitngap | IWMP-IV |

## *2.4. Organising the Study*

**2.4.1. Desk Review and Secondary Data:** NEDFi monitoring team conducted the desk review of the various documents relevant to the projects e.g. Detailed Project Report, Periodic Reports, activities proposed under the IWMP Programme etc. Secondary data related to population size, district profiles, village records, government schemes, annual rainfall etc were collected from reliable sources. Important study materials were also downloaded from many websites.

**2.4.2. Field Testing of Survey Schedules:** In order to experience the efficiency of the survey schedules, field testing of the survey schedules were carried out in Ribhoi district of Meghalaya. Field test were conducted in four villages. Learnings implemented from field testing are as follows;

- Direct statements related to income and bank details of the respondents were revised.
- Time consumption for each survey schedule is identified and entire field survey is planned according to the experience.
- Requirement of engaging a local language translator is understood.
- Importance of networking and early information is followed while visiting households so that respondents are found available for the survey.

**2.4.3. Field Survey:** Core officials of NEDFi Monitoring Team (MEL&D agency) were directly supervising the field survey process and were actively involved with the field investigation team members covering major sample project locations. For Household information, interviewers visited the individual households to conduct the interview with selected respondents.

**2.4.4. Focus Group Discussion:** For village level information, Focus Group Discussion (FGD) was conducted at 40 (Forty) villages. Villagers including women gathered at a suitable premise to share about their knowledge, opinion, perspective and interests about issues/indicators. Village level data collected through FGD has been entered in MS excel and its analysis has been also used in confirming the findings.

**2.4.5. Data Processing and Analysis:** MS Excel software was used for making data entry and the data entry were made by the experienced field-coordinators. All the collected data were processed and analysed in accordance with the objectives of the study. Coding, editing, rechecking and tabulation were carried out during processing of data. Consistency checks and key stroke errors were detected and corrected accordingly before data analysis.

**2.4.6. Study Report:** Finally Baseline Study Report has been prepared based on the secondary & primary data analysed, its interpretation, observations and discussions with various stakeholders during field visit.

## *2.5. Quality Control*

One field interviewer could finish around 8 (Eight) to 10(Ten) survey schedules in a day. Primary data collected through household survey was scrutinized and cross-checked by the team members on daily basis. Each evening, the field co-ordinators were responsible for collecting the schedules and checking them for completion, legibility and consistency. They also followed up for any inconsistencies or missing information. Furthermore, the project co-ordinator supervised the quality by randomly checking the household schedules.

## *2.6. Ethical Practices*

The research protocol ensured high standards of ethical conduct. The basic guiding principles were voluntary participation (respondents were not coerced for participation); consent before interview (participants were fully informed about the objectives of the project and the purpose of the baseline study), confidentiality (identifying information will not be made available to anyone who is not directly involved in the project without the respondents' consent), respect and treating respondents fairly.

## *2.7. Field Work Challenges*

- Non-existence of motorable road and difficult hilly terrain leading to some of the sample villages.
- Facilitating the Field Survey and arranging Focus Group Discussion (FGD) with due permission of Village Headman.
- Convincing the villagers speaking different languages in some villages (Like Mikir language in a village of Ribhoi district, Biate language in a village of East Jaintia Hills district etc. apart from common languages of Meghalaya like Khashi, Jaintia and Garo language.)

However, the survey team managed to overcome the challenges by applying different approaches in order to complete the survey within the scheduled time frame.

# 3. FINDINGS OF THE BASELINE SURVEY – BATCH V

The following sub-sections give the findings of the Baseline Survey for IWMP – Batch V in the project districts of Meghalaya state. It may be noted that for Batch-V projects, the survey covered projects in the following districts of the state:

(a) East Jaintia Hills;

(b) North Garo Hills; and

(c) South West Khasi Hills

## *3.1. Location [Batch V]*

**Findings**

The names of the project villages have been furnished at overleaf (under Table-3.2), along with their location particulars (watershed, block and district).

The same may be seen in the above regard.

**Analysis**

The survey encompassed four districts of Meghalaya under Batch V. As previously stated; in this batch, four watersheds, one in each district, had been considered. Further, in **each** watershed, the survey covered four villages– which were located as follows:

- Lower Reach - One village
- Middle Reach - One village
- Upper Reach - One village

In addition, one village (without any project interventions) was taken as **control village** and covered under the study.

Thus in all, sixteen villages were included under the study for Batch-V projects. The following table summarizes their distribution across the districts,

**Table-3.1: No. of Villages Covered under the Study [Batch V]**

| Type of Village | Coverage per Watershed [As per Methodology] | No. of Watersheds Studied – BATCH V | Total Villages Studied @ 1 per Watershed |
|---|---|---|---|
| Lower Reach | 1 | 3 | 3 |
| Middle Reach | 1 | 3 | 3 |
| Upper Reach | 1 | 3 | 3 |
| Control Village | 1 | 3 | 3 |
| **TOTAL VILLAGES** | -- | -- | **12** |

**Table-3.2 Location Particulars of Project Villages covered under Baseline Survey [Part-III]**

| Sl. No. | Batch | District | Block | Names of Covered Villages | | | | | | Control Village |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Upper Reach | | Middle Reach | | Lower Reach | | |
| | | | | Village | Watershed | Village | Watershed | Village | Watershed | |
| 1 | Batch – V | East Jaintia Hills | Saipung | Saipung | Khonda Dung | Ngaibang | Khonda Dung | Lura | Khuang Thilsi | Bam Khongsi |
| 2 | Batch – V | North Garo Hills | Resubelpara | Merongdik | Merongdik | Samkalak Songma | Rongma | Garo Thorikakona | Merongdik | Rabha Thorikakona |
| 3 | Batch – V | South West Khasi Hills | Ranikor | Wahkaji | Phud-Phra-Phud Tangshot | Mawthabah | Phud-Phra-Phud Tangshot | Langpa | Phud-Phra-Phud Tangshot | Mawkhlaitngap |

**Source**: Survey Schedule-Household, Part (A) – Location and Survey Schedule – Village Part (A) Village Details

## *3.2. Household & Land Details [Batch V]*

### 3.2.1. HOUSEHOLD, SOCIAL CATEGORY & HOMESTEAD LAND DETAILS

**Findings**

In the project villages studied under Batch-V; data was collected on the following parameters as a part of the survey:

- No. of Households
- Social Category
- Homestead Land

Table-3.3 at overleaf gives the findings on the above parameters for the project villages (Batch-V). The same may be seen in the above connection.

**Analysis**

*Number of Households*

In all, as many as 168 households were covered under the present survey. These are distributed as follows:

No. of Households in Project Villages: 112

No. of Households in Control Villages: 56

*Social Category*

All households of all the villages (project villages as well as control villages) belonged to the social category of Scheduled Tribe (ST).

*Homestead Land*

As an outcome of the Baseline Survey, it is found from Table-3.3 that:

- All households in the villages (project village and control village) possess homestead land (i.e. land for locating their houses).
- The average of homestead land owned by a household in the project villages is about 0.196 Hectares (Ha), which is about 1,960 $m^2$ (or approx. 21,097 $ft^2$).
- In the control villages covered by the study, the size of an average homestead land is a bit smaller, viz. 0.118 Ha (about 1,180 $m^2$) – which is about 12,702 $ft^2$.
- Thus, the size of average homestead land of households in control villages is over 40% smaller when compared to the average size of similar land located in the project villages.
- Table-3.3 also gives the Standard Deviation (SD) of the homestead land in the different villages (project villages as well as control villages) covered by the study. SD is a measure of variation of the responses received. In Table-3.3, if SD is higher in a particular village, it means that there is a (comparatively) higher variation in the amount of homestead land in the sampled households in that village.

**Table-3.3 Households, Social Category & Homestead Land [BATCH V]**

| District | Village | Location | Households | Social Category | | | | Homestead Land (in Ha) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SC | ST | OBC | General | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | |
| East Jaintia Hills | Saipung | Upper Reach | 20 | 0 | 20 | 0 | 0 | 20 | 0.300 | 0.621 |
| | Ngaibang | Middle Reach | 4 | 0 | 4 | 0 | 0 | 4 | 0.258 | 0.279 |
| | Lura | Lower Reach | 16 | 0 | 16 | 0 | 0 | 16 | 0.028 | 0.013 |
| North Garo Hills | Merongdik | Upper Reach | 9 | 0 | 9 | 0 | 0 | 9 | 0.373 | 0.089 |
| | Samkalak Songma | Middle Reach | 12 | 0 | 12 | 0 | 0 | 12 | 0.300 | 0.160 |
| | Garo Thorikakona | Lower Reach | 20 | 0 | 20 | 0 | 0 | 20 | 0.264 | 0.107 |
| South West Khasi Hills | Wahkaji | Upper Reach | 21 | 0 | 21 | 0 | 0 | 21 | 0.049 | 0.104 |
| | Mawthabah | Middle Reach | 5 | 0 | 5 | 0 | 0 | 5 | 0.111 | 0.119 |
| | Langpa | Lower Reach | 5 | 0 | 5 | 0 | 0 | 5 | 0.137 | 0.204 |
| **TOTAL/AVERAGE** | **(PROJECT)** | **--** | **112** | **--** | **112** | **--** | **--** | **112** | **0.196** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | Control Village | 20 | 0 | 20 | 0 | 0 | 20 | 0.018 | 0.013 |
| North Garo Hills | Rabha Thorikakona | Control Village | 21 | 0 | 21 | 0 | 0 | 21 | 0.267 | 0.064 |
| South West Khasi Hills | Mawkhlaitngap | Control Village | 15 | 0 | 15 | 0 | 0 | 15 | 0.043 | 0.044 |
| **TOTAL/AVERAGE** | **(CONTROL)** | **--** | **56** | **--** | **56** | **--** | **--** | **56** | **0.118** | **--** |

**Note:**

**n** gives the number of responses to the query

$\bar{x}$ gives the arithmetical mean of the responses

**s. d.** is the standard deviation (calculated by the following formula) of the responses received

s. d. $= \sqrt{\frac{\sum(x-\bar{x})^2}{(n-1)}}$, where n is the sample size and $\bar{x}$ is the sample mean

Standard deviation is a measure of the variation of the responses

### 3.2.2. OPERATIONAL HOLDINGS – NO. OF PLOTS

**Findings**

The term 'Operational Holdings' refers to the farm land which is operated on (i.e. farmed) by the members of the sampled household. It can include both owned land as well as leased land. In the project and control villages studied under Batch-V; data was collected on the following parameters related to Operational Holdings as a part of the survey: (a) No. of Plots - both 'owned and utilised' and 'other utilized' (land used by the household on lease or on some other understanding with the land owners); and (b) Area of Operational Holdings.

Regarding the 'No. of Plots' operated upon by the sampled households; Table-3.4 at overleaf gives the findings for the study (for Batch-V). The area aspects related to operational holdings is discussed in the next sub-section (Sub-section 3.2.3).

**Analysis**

*Number of Plots – Owned & Utilized*

As per the study, on an average, the sampled households owned and utilized (farmed) the following number of plots:

| Project Villages | |
|---|---|
| Cropped (Irrigated) | NIL |
| Cropped (Non-Irrigated) | 0.911 |
| Fallow | 0.161 |
| TOTAL (Project Villages) | 1.072 plots |

| Control Villages | |
|---|---|
| Cropped (Irrigated) | NIL |
| Cropped (Non-Irrigated) | 0.375 |
| Fallow | 0.018 |
| TOTAL (Control Villages) | 0.393 plots |

An average household has more than one plot of land owned by it in the project villages. In the control villages, households farm less than half a plot on an average, which they own.

*Number of Plots – Other Utilized*

As per the study, on an average, the sampled households utilized (farmed) the following number of plots, which they did not own:

| Project Villages | |
|---|---|
| Cropped (Irrigated) | NIL |
| Cropped (Non-Irrigated) | 0.152 |
| Fallow | 0.009 |
| TOTAL (Project Villages) | 0.161 plots |

| Control Villages | |
|---|---|
| Cropped (Irrigated) | NIL |
| Cropped (Non-Irrigated) | 0.107 |
| Fallow | NIL |
| TOTAL (Control Villages) | 0.107 plots |

In both types of villages, households are utilizing less than a plot that is not owned by them (utilized on lease basis or on some understanding with the owner of the land).

Table 3.4 Operational Holdings – No. of Plots [BATCH V]

| District | Village | Location | n | Owned + Utilized by Self | | | | | | | | Other Utilized | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Cropped | | | | Fallow Land | | Other | | Cropped | | | | Fallow Land | | Other | |
| | | | | Irrigated | | Non-Irrigated | | | | | | Irrigated | | Non-Irrigated | | | | | |
| | | | | $\bar{x}$ | SD | $\bar{x}$ | SD | $\bar{x}$ | SD | $\bar{x}$ | SD | $\bar{x}$ | SD | $\bar{x}$ | SD | $\bar{x}$ | SD | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | Upper Reach | 20 | 0.0 | 0.0 | 0.800 | 0.523 | 0.100 | 0.308 | 0.0 | 0.0 | 0.0 | 0.0 | 0.100 | 0.308 | 0.0 | 0.0 | 0.0 | 0.0 |
| | Ngaibang | Middle Reach | 4 | 0.0 | 0.0 | 0.500 | 0.577 | 0.250 | 0.500 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | Lura | Lower Reach | 16 | 0.0 | 0.0 | 1.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| North Garo Hills | Merongdik | Upper Reach | 9 | 0.0 | 0.0 | 1.444 | 1.130 | 0.111 | 0.333 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | Samkalak Songma | Middle Reach | 12 | 0.0 | 0.0 | 0.917 | 0.289 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | Garo Thorikakona | Lower Reach | 20 | 0.0 | 0.0 | 0.950 | 0.605 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| South West Khasi Hills | Wahkaji | Upper Reach | 21 | 0.0 | 0.0 | 0.524 | 0.512 | 0.381 | 0.498 | 0.0 | 0.0 | 0.0 | 0.0 | 0.334 | 0.482 | 0.048 | 0.218 | 0.0 | 0.0 |
| | Mawthabah | Middle Reach | 5 | 0.0 | 0.0 | 1.800 | 2.168 | 0.400 | 0.548 | 0.0 | 0.0 | 0.0 | 0.0 | 0.800 | 0.837 | 0.0 | 0.0 | 0.0 | 0.0 |
| | Langpa | Lower Reach | 5 | 0.0 | 0.0 | 1.000 | 0.707 | 0.800 | 0.447 | 0.0 | 0.0 | 0.0 | 0.0 | 0.800 | 1.304 | 0.0 | 0.0 | 0.0 | 0.0 |
| **TOTAL/AVG** | **(PROJECT)** | | **112** | **0.0** | **--** | **0.911** | **--** | **0.161** | **--** | **0.0** | **--** | **0.0** | **--** | **0.152** | **--** | **0.009** | **--** | **0.0** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | Control Village | 20 | 0.0 | 0.0 | 0.0 | 0.0 | 0.050 | 0.224 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| North Garo Hills | Rabha Thorikakona | Control Village | 21 | 0.0 | 0.0 | 0.667 | 0.730 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| South West Khasi Hills | Mawkhlaitngap | Control Village | 15 | 0.0 | 0.0 | 0.467 | 0.640 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.400 | 0.507 | 0.0 | 0.0 | 0.0 | 0.0 |
| **TOTAL/AVG** | **(CONTROL)** | | **56** | **0.0** | **--** | **0.375** | **--** | **0.018** | **--** | **0.0** | **--** | **0.0** | **--** | **0.107** | **--** | **0.0** | **--** | **0.0** | **--** |

**Note:**

**n** gives the number of responses to the query

$\bar{x}$ gives the arithmetical mean of the responses

**s. d.** is the standard deviation (calculated by the following formula) of the responses received

s. d. $= \sqrt{\frac{\sum(x-\bar{x})^2}{(n-1)}}$, where n is the sample size and $\bar{x}$ is the sample mean

Standard deviation is a measure of the variation of the responses

### 3.2.3. OPERATIONAL HOLDINGS – AREA

**Findings**

As stated previously, the term 'Operational Holdings' refers to farm land which is operated on (i.e. farmed) by the members of the sampled household. It can include both owned land as well as leased land. In the project and control villages studied under Batch-V; data was collected on the following parameters related to Operational Holdings as a part of the survey: (a) No. of Plots - both 'owned and utilised' and 'other utilized'; and (b) Area of Operational Holdings. The findings on 'Number of Plots' have been given previously. This sub-section gives discusses the area of the operational holdings of the sampled households. Table-3.5 (available at the page after next page) may be referred to in the above connection.

**Analysis**

*Area of Holdings – Owned & Utilized Plots*

As per the survey, on an average, the sampled households owned and utilized (farmed) the following area of operational holdings:

| Project Villages | |
|---|---|
| Cropped (Irrigated) | 0.000 Ha |
| Cropped (Non-Irrigated) | 0.831 Ha |
| Fallow | 0.513 Ha |
| TOTAL (Project Villages) | 1.344 Ha |

| Control Villages | |
|---|---|
| Cropped (Irrigated) | 0.000 Ha |
| Cropped (Non-Irrigated) | 0.298 Ha |
| Fallow | 0.012 Ha |
| TOTAL (Control Villages) | 0.310 Ha |

In the project villages, an average household has about 1.344 Ha of land owned by it. In the control villages, households farm just over one-third of a hectare on ownership basis.

*Area of Holdings – Other Utilized Plots*

As per the survey, on an average, the sampled households utilized (farmed) the following area of holdings, which they did not own:

| Project Villages | |
|---|---|
| Cropped (Irrigated) | 0.000 Ha |
| Cropped (Non-Irrigated) | 0.486 Ha |
| Fallow | 0.067 Ha |
| Other | 0.010 Ha |
| TOTAL (Project Villages) | 0.563 Ha |

| Control Villages | |
|---|---|
| Cropped (Irrigated) | 0.000 Ha |
| Cropped (Non-Irrigated) | 0.094 Ha |
| Fallow | 0.000 Ha |
| Other | 0.009 Ha |
| TOTAL (Control Villages) | 0.103 Ha |

In project villages, the average household is utilizing more than half a hectare of land not owned by them whereas in control villages, average household is utilizing less than half a hectare of land not owned by them (utilized on lease basis or on some understanding with the owner of the land).

### *Total Area of Operational Holdings*

As per the survey, on an average, the sampled households utilized (farmed) the following area of total land holdings, (both owned and not-owned).

| Project Villages | |
|---|---|
| Cropped (Irrigated) | 0.000 Ha |
| Cropped (Non-Irrigated) | 1.317 Ha |
| Fallow | 0.580 Ha |
| Other | 0.010 Ha |
| TOTAL (Project Villages) | 1.907 Ha |

| Control Villages | |
|---|---|
| Cropped (Irrigated) | 0.000 Ha |
| Cropped (Non-Irrigated) | 0.400 Ha |
| Fallow | 0.012Ha |
| Other | 0.009 Ha |
| TOTAL (Control Villages) | 0.421 Ha |

In both types of villages, the average household is having a low area of land-holdings. As per Government of India, such holdings will be judged as 'marginal holdings'.

**In fact, the average farmer covered under the study is a marginal farmer with land holdings of less than 2 Hectares in the Project Villages, and below 0.50 Hectare in the Control Villages.**

### *Leased Out Land*

The survey also collected data on the quantum of land leased out by the sampled households.

For the project villages, the area of leased out land was found to be about 0.036 hectare (360 square metres) on an average. In the control villages, none of the above households had leased out any land.

**Table 3.5 Operational Holdings – Area [BATCH V]**

| District | Village | Location | n | Owned + Utilized by Self | | | | | | | | Other Utilized | | | | | | | | Total Area | | | | | | | | Leased Out Land Area | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Cropped | | | | Fallow Land | | Other | | Cropped | | | | Fallow Land | | Other | | Cropped | | | | Fallow Land | | Other | | | |
| | | | | Irrigated | | Non-Irrigated | | | | | | Irrigated | | Non-Irrigated | | | | | | Irrigated | | Non-Irrigated | | | | | | | |
| | | | | $\bar{x}$ | SD | $\bar{x}$ | SD | $\bar{x}$ | SD | $\bar{x}$ | SD | $\bar{x}$ | SD | $\bar{x}$ | SD | $\bar{x}$ | SD | $\bar{x}$ | SD | $\bar{x}$ | SD | $\bar{x}$ | SD | $\bar{x}$ | SD | $\bar{x}$ | SD | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | Upper Reach | 20 | 0 | 0 | 0.478 | 0.641 | 0.350 | 1.348 | 0 | 0 | 0 | 0 | 0.042 | 0.148 | 0.300 | 1.341 | 0.032 | 0.143 | 0 | 0 | 0.520 | 0.789 | 0.650 | 2.689 | 0.032 | 0.143 | 0 | 0 |
| | Ngaibang | Middle Reach | 4 | 0 | 0 | 0.327 | 0.398 | 0.080 | 0.160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.107 | 0.123 | 0 | 0 | 0.327 | 0.398 | 0.080 | 0.160 | 0.107 | 0.123 | 0 | 0 |
| | Lura | Lower Reach | 16 | 0 | 0 | 0.522 | 1.035 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.522 | 1.035 | 0 | 0 | 0 | 0 | 0 | 0 |
| North Garo Hills | Merongdik | Upper Reach | 9 | 0 | 0 | 0.737 | 0.462 | 0.017 | 0.053 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.737 | 0.462 | 0.017 | 0.053 | 0 | 0 | 0 | 0 |
| | Samkalak Songma | Middle Reach | 12 | 0 | 0 | 0.300 | 0.220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.300 | 0.220 | 0 | 0 | 0 | 0 | 0.333 | 0.887 |
| | Garo Thorikakona | Lower Reach | 20 | 0 | 0 | 0.268 | 0.162 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.268 | 0.162 | 0 | 0 | 0 | 0 | 0 | 0 |
| South West Khasi Hills | Wahkaji | Upper Reach | 21 | 0 | 0 | 0.680 | 1.190 | 0.666 | 1.238 | 0 | 0 | 0 | 0 | 0.553 | 1.318 | 0.071 | 0.239 | 0 | 0 | 0 | 0 | 1.233 | 2.508 | 0.737 | 1.477 | 0 | 0 | 0 | 0 |
| | Mawthabah | Middle Reach | 5 | 0 | 0 | 5.200 | 5.585 | 3.000 | 4.472 | 0 | 0 | 0 | 0 | 3.400 | 4.449 | 0 | 0 | 0 | 0 | 0 | 0 | 8.600 | 10.034 | 3.00 | 4.472 | 0 | 0 | 0 | 0 |
| | Langpa | Lower Reach | 5 | 0 | 0 | 3.600 | 3.498 | 4.200 | 2.856 | 0 | 0 | 0 | 0 | 5.000 | 7.745 | 0 | 0 | 0 | 0 | 0 | 0 | 8.600 | 11.243 | 4.200 | 2.856 | 0 | 0 | 0 | 0 |
| **TOTAL/AVG** | **(PROJECT)** | **--** | **112** | **0.0** | **--** | **0.831** | **--** | **0.513** | **--** | **0.0** | **--** | **0.0** | **--** | **0.486** | **--** | **0.067** | **--** | **0.010** | **--** | **0.0** | **--** | **1.317** | **--** | **0.580** | **---** | **0.010** | **--** | **0.036** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | Control Village | 20 | 0 | 0 | 0 | 0 | 0.025 | 0.111 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.025 | 0.111 | 0 | 0 | 0 | 0 | 0.025 | 0.111 | 0.025 | 0.111 | 0 | 0 |
| North Garo Hills | Rabha Thorikakona | Control Village | 21 | 0 | 0 | 0.446 | 0.685 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.446 | 0.685 | 0 | 0 | 0 | 0 | 0 | 0 |
| South West Khasi Hills | Mawkhlaitngap | Control Village | 15 | 0 | 0 | 0.487 | 0.926 | 0.013 | 0.052 | 0 | 0 | 0 | 0 | 0.352 | 0.688 | 0 | 0 | 0 | 0 | 0 | 0 | 0.839 | 1.614 | 0.013 | 0.052 | 0 | 0 | 0 | 0 |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **56** | **0.0** | **--** | **0.298** | **--** | **0.012** | **--** | **0.0** | **--** | **0.0** | **--** | **0.094** | **--** | **0.0** | **--** | **0.009** | **--** | **0.0** | **--** | **0.400** | **--** | **0.012** | **--** | **0.009** | **--** | **0.0** | **--** |

**NOTE:**

**n** gives the number of responses to the query

$\bar{x}$ gives the arithmetical mean of the responses

**s. d.** is the standard deviation (calculated by the following formula) of the responses received

s. d. $= \sqrt{\frac{\sum(x-\bar{x})^2}{(n-1)}}$, where n is the sample size and $\bar{x}$ is the sample mean

Standard deviation is a measure of the variation of the responses

### 3.2.4. DETAILS OF HOUSEHOLD MEMBERS

**Findings**

Table-3.6 reports the findings of the following household parameters:

- Household & Population
- Age
- Gender
- Education

In the following paragraphs, the analysis of the above aspects is given as a whole for the project villages and for the control villages. Village details are available in the above table.

**Analysis**

*Household Size*

In the project villages chosen for the survey, the average household size is found to be 5.4 persons. It ranges from 4.2 to 7.2 in the different project villages. On the other hand, in the control villages covered, the average household size is 5.8 persons. The household size ranges from 4.7 to 7.3 in these villages.

*Age Distribution of the Population*

**Project Villages:** The age distribution of the population in the project villages is found to be as follows:

| | | | |
|---|---|---|---|
| 0-below 6 years | 11% | 35 – below 60 years | 22% |
| 6-below 18 years | 29% | 60 years & above | 6% |
| 18-below 35 years | 32% | --- | |

**Control Villages**: The age distribution of the population in the control villages is found to be as follows:

| | | | |
|---|---|---|---|
| 0-below 6 years | 11% | 35 – below 60 years | 30% |
| 6-below 18 years | 28% | 60 years & above | 6% |
| 18-below 35 years | 34% | --- | |

[**Note**: All figures have been rounded off. The total may exceed 100% at time.]

*Gender Profile*

In the project villages, 51% of the population is male. (Sex ratio is 944 females per 1000 males.) In the control village, the numbers of male and female are about the same.

*Educational Attainments*

In the project villages; more than half (51%) of the population have studied till Class X or less. Here, about 21% have not gone to school or did not mention their schooling in the survey. In the control villages; the picture is similar – 57% did not study beyond Class X, while 30% either have no schooling or have not stated anything in the above regard.

Table-3.6: Details of Household Members (Part 1) [BATCH V]

| District | Village | Location | Households | Population | Age (in Years) | | | | | Gender | | Education | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Below 6 | 6-Below 18 | 18 - Below 35 | 35-Below 60 | 60 and above | Male | Female | Below Class X | Class X | Class XI+XII | Graduation | No School / Not Given |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | Upper Reach | 20 | 98 | 12 | 32 | 26 | 27 | 1 | 49 | 49 | 45 | 19 | 10 | 3 | 21 |
| | Ngaibang | Middle Reach | 4 | 20 | 1 | 4 | 8 | 4 | 3 | 10 | 10 | 11 | 2 | 2 | 1 | 4 |
| | Lura | Lower Reach | 16 | 82 | 16 | 13 | 25 | 15 | 13 | 41 | 41 | 40 | 6 | 4 | 1 | 31 |
| North Garo Hills | Merongdik | Upper Reach | 9 | 56 | 9 | 20 | 12 | 11 | 4 | 24 | 32 | 37 | 3 | 1 | 0 | 15 |
| | Samkalak Songma | Middle Reach | 12 | 58 | 5 | 23 | 18 | 11 | 1 | 32 | 26 | 26 | 7 | 0 | 0 | 25 |
| | Garo Thorikakona | Lower Reach | 20 | 105 | 6 | 22 | 41 | 29 | 7 | 51 | 54 | 63 | 16 | 11 | 8 | 7 |
| South West Khasi Hills | Wahkaji | Upper Reach | 21 | 133 | 14 | 39 | 50 | 25 | 5 | 70 | 63 | 58 | 19 | 19 | 15 | 22 |
| | Mawthabah | Middle Reach | 5 | 21 | 4 | 4 | 6 | 6 | 1 | 12 | 9 | 9 | 4 | 4 | 2 | 2 |
| | Langpa | Lower Reach | 5 | 36 | 3 | 19 | 7 | 7 | 0 | 19 | 17 | 24 | 4 | 3 | 2 | 3 |
| **TOTAL/AVG** | **(PROJECT)** | **--** | **112** | **609** | **70** | **176** | **193** | **135** | **35** | **308** | **301** | **313** | **80** | **54** | **32** | **130** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | Control Village | 20 | 94 | 11 | 27 | 33 | 23 | 0 | 43 | 51 | 54 | 4 | 8 | 4 | 24 |
| North Garo Hills | Rabha Thorikakona | Control Village | 21 | 122 | 7 | 23 | 53 | 26 | 13 | 69 | 53 | 66 | 24 | 12 | 4 | 16 |
| South West Khasi Hills | Mawkhlaitngap | Control Village | 15 | 109 | 19 | 41 | 23 | 19 | 7 | 58 | 51 | 64 | 7 | 5 | 5 | 28 |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **56** | **325** | **37** | **91** | **109** | **68** | **20** | **170** | **155** | **184** | **35** | **25** | **13** | **68** |

### 3.2.5. DETAILS OF HOUSEHOLD MEMBERS (OCCUPATIONS & MEMBERSHIPS OF SHG ETC.)

**Findings**

Table-3.7 (at overleaf) indicates the findings of the following household parameters:

- Primary Occupation
- Secondary Occupation
- Membership of SHG / UG / Village Dorbar etc.

The following paragraphs furnish an analysis of the above areas as a whole for the village; with such analysis being done separately for the project villages and for the control villages. Village details are available in the above table, and may be seen therein.

**Analysis**

*Primary Occupation*

In the project villages, the primary occupations of the household members are as given below:

Project Villages: In these villages, less than one-fifth (10%) of the household members are engaged as daily wage labourers, while an additional one-fifth (15%) work in agriculture (and related work). Nearly two-fifths (44%) of the population are students, while 12% of members either have no occupation or have not stated the same. In addition, 11% of the household members are housewives and 8% have other occupations.

Control Villages: Just one-tenth (14%) of the household members are labourers, while over one-fifth (21%) are farmers. Two-fifths (40%) are students and 9% are housewives. Further, 11% of members either have no occupation or have not stated the same.

[**Note:** Other Occupations (Primary) include teacher, Govt. service, ASHA, Anganwadi worker, driver, home-guard, business, shop-keeping, carpenter etc. and students include children in pre-school facilities.]

*Secondary Occupation*

In the project villages and control villages, very few persons (below 2%) have indicated any secondary occupations.

[**Note**: Other Occupations (Secondary) include all occupations excluding agriculture and labour. Secondary Occupations have been indicated by only some of the respondents.]

*Membership of SHG / UG / Village Dorbar*

In the project villages; just over 1% of the population of the sampled households are members of any community based organization (like Self Help Group, User Groups, and Village Dorbar etc.).

In the control villages, less than 2% of the population are members of similar organizations.

Table-3.7: Details of Household Members (Part 2) [BATCH V]

| District | Village | Location | Households | Population | Primary Occupation | | | | | | Secondary Occupation | | | Whether member of SHG / UG/ Village Dorbar | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Agriculture | Labour | Housewife / At Home | Students | Others (1) | No Occupation / Not Given | Agriculture | Labour | Others (2) | Yes | No |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | Upper Reach | 20 | 98 | 19 | 1 | 14 | 53 | 11 | 0 | 0 | 7 | 0 | 0 | 98 |
| | Ngaibang | Middle Reach | 4 | 20 | 3 | 3 | 3 | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 20 |
| | Lura | Lower Reach | 16 | 82 | 13 | 11 | 22 | 23 | 4 | 9 | 1 | 4 | 0 | 0 | 82 |
| North Garo Hills | Merongdik | Upper Reach | 9 | 56 | 19 | 2 | 1 | 28 | 1 | 5 | 0 | 2 | 0 | 6 | 50 |
| | Samkalak Songma | Middle Reach | 12 | 58 | 16 | 8 | 1 | 25 | 1 | 7 | 2 | 0 | 1 | 2 | 56 |
| | Garo Thorikakona | Lower Reach | 20 | 105 | 10 | 15 | 13 | 45 | 9 | 13 | 0 | 2 | 0 | 1 | 104 |
| South West Khasi Hills | Wahkaji | Upper Reach | 21 | 133 | 4 | 18 | 10 | 53 | 11 | 37 | 0 | 0 | 0 | 0 | 133 |
| | Mawthabah | Middle Reach | 5 | 21 | 6 | 0 | 0 | 9 | 4 | 2 | 0 | 0 | 0 | 0 | 21 |
| | Langpa | Lower Reach | 5 | 36 | 3 | 1 | 5 | 26 | 1 | 0 | 0 | 0 | 0 | 0 | 36 |
| **TOTAL/AVG** | **(PROJECT)** | **--** | **112** | **609** | **93** | **59** | **69** | **268** | **47** | **73** | **3** | **15** | **1** | **9** | **600** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | Control Village | 20 | 94 | 10 | 30 | 5 | 38 | 1 | 10 | 0 | 3 | 0 | 0 | 94 |
| North Garo Hills | Rabha Thorikakona | Control Village | 21 | 122 | 35 | 12 | 21 | 40 | 12 | 2 | 0 | 0 | 2 | 5 | 117 |
| SouthWest Khasi Hills | Mawkhlaitngap | Control Village | 16 | 109 | 24 | 5 | 3 | 51 | 2 | 24 | 0 | 0 | 0 | 0 | 109 |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **56** | **325** | **69** | **47** | **29** | **129** | **15** | **36** | **0** | **3** | **2** | **5** | **320** |

**Notes**:

(1) Other Occupations (Primary) include teacher, govt. service, ASHA, Anganwadi worker, driver, home-guard, business, shop-keeping, carpenter etc. Students include pre-schoolers.

(2) Other Occupations (Secondary) include all occupations excluding agriculture and labour.

(3) Secondary Occupations have been indicated by only some of the respondents.

Table-3.8: Soil Health [BATCH V]

| District | Village | Location | Households | Soil Tested | | If 'Yes' | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Yes | No | Cost of Soil Testing | | | Status of Soil Carbon | | |
| | | | | | | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | |
| East Jaintia Hills | Saipung | Upper Reach | 20 | 0 | 20 | -- | -- | -- | -- | -- | -- |
| | Ngaibang | Middle Reach | 4 | 0 | 4 | -- | -- | -- | -- | -- | -- |
| | Lura | Lower Reach | 16 | 0 | 16 | -- | -- | -- | -- | -- | -- |
| North Garo Hills | Merongdik | Upper Reach | 9 | 0 | 9 | -- | -- | -- | -- | -- | -- |
| | Samkalak Songma | Middle Reach | 12 | 0 | 12 | -- | -- | -- | -- | -- | -- |
| | Garo Thorikakona | Lower Reach | 20 | 0 | 20 | -- | -- | -- | -- | -- | -- |
| South West Khasi Hills | Wahkaji | Upper Reach | 21 | 0 | 21 | -- | -- | -- | -- | -- | -- |
| | Mawthabah | Middle Reach | 5 | 0 | 5 | -- | -- | -- | -- | -- | -- |
| | Langpa | Lower Reach | 5 | 0 | 5 | -- | -- | -- | -- | -- | -- |
| **TOTAL/AVG** | **(PROJECT)** | **--** | **112** | **--** | **112** | -- | -- | -- | -- | -- | -- |
| **CONTROL VILLAGE** | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | Control Village | 20 | 0 | 20 | -- | -- | -- | -- | -- | -- |
| North Garo Hills | Rabha Thorikakona | Control Village | 21 | 0 | 21 | -- | -- | -- | -- | -- | -- |
| South West Khasi Hills | Mawkhlaitngap | Control Village | 15 | 0 | 16 | -- | -- | -- | -- | -- | -- |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **56** | **--** | **56** | -- | -- | -- | -- | -- | -- |

3.2.6. SOIL HEALTH

From Table-3.8 (given in the previous page), it is found that no soil testing was carried out in any of the households covered by the survey, both in the project villages, as well as the in the control villages.

## *3.3. Irrigation [Batch V]*

3.3.1. IRRIGATED AREA

From Table-3.9 (given in the next page), it is found that there is no irrigated area in the project villages and control villages covered under the present study.

The above information tallies with the data furnished previously with the present report (viz. under Table-3.4 and Table-3.5).

3.3.2. SOURCE & TOTAL IRRIGATED AREA

As stated at above, there is no irrigated area in the project villages and control villages as per the present study.

Hence, Table-3.10 is left blank. This table is available after Table-3.9.

3.3.3. INFORMATION ON IRRIGATION SOURCES

Not applicable. There are no irrigated areas in the project and control villages. All agriculture is reported to be rain-fed.

Table-3.11 gives the format of the reporting table. This table is available after Table-3.10.

3.3.4. WATER AVAILABILITY (FOR SEASONAL SOURCES)

Not applicable - as there are no irrigated areas in the sampled villages.

Table-3.12 gives the format of the reporting table. This table is available after Table-3.11.

**Table-3.9: Irrigated Area [BATCH V]**

| District | Village | Location | Households | Irrigated Area (in Hectares) | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | PRE-KHARIF | | | | | | | | | KHARIF | | | | | | | | | RABI | | | | | | | | |
| | | | | Upper Reach | | | Middle Reach | | | Lower Reach | | | Upper Reach | | | Middle Reach | | | Lower Reach | | | Upper Reach | | | Middle Reach | | | Lower Reach | | |
| | | | | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Ngaibang | MR | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Lura | LR | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| North Garo Hills | Merongdik | UR | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Samkalak Songma | MR | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Garo Thorikakona | LR | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| South West Khasi Hills | Wahkaji | UR | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Mawthabah | MR | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Langpa | LR | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL/AVG** | **(PROJECT)** | **--** | **--** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **--** | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Notes**: UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under Irrigated Area:**

**n** gives the number of responses to the query

$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the irrigated area)

**s. d**. is the standard deviation (calculated by the following formula) of the responses received

$$\text{s. d.} = \sqrt{\frac{\sum(x-\bar{x})^2}{(n-1)}}$$, where n is the sample size and $\bar{x}$ is the sample mean

Standard deviation is a measure of the variation of the responses

**Table-3.10: Source & Total Irrigated Area [BATCH V]**

| District | Village | Location | Households | Source of Irrigation | | | Total Irrigated Area (in Hectares) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Upper Reach | Middle Reach | Lower Reach | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | --- | --- | --- | 0 | 0 | 0 |
| | Ngaibang | MR | 4 | --- | --- | --- | 0 | 0 | 0 |
| | Lura | LR | 16 | --- | --- | --- | 0 | 0 | 0 |
| North Garo Hills | Merongdik | UR | 9 | --- | --- | --- | 0 | 0 | 0 |
| | Samkalak Songma | MR | 12 | --- | --- | --- | 0 | 0 | 0 |
| | Garo Thorikakona | LR | 20 | --- | --- | --- | 0 | 0 | 0 |
| South West Khasi Hills | Wahkaji | UR | 21 | --- | --- | --- | 0 | 0 | 0 |
| | Mawthabah | MR | 5 | --- | --- | --- | 0 | 0 | 0 |
| | Langpa | LR | 5 | --- | --- | --- | 0 | 0 | 0 |
| **TOTAL/AVG** | **(PROJECT)** | **--** | **112** | --- | --- | --- | **0** | **0** | **0** |
| **CONTROL VILLAGE** | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | --- | --- | --- | 0 | 0 | 0 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | --- | --- | --- | 0 | 0 | 0 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | --- | --- | --- | 0 | 0 | 0 |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **56** | --- | --- | --- | **0** | **0** | **0** |

**Notes**:

1. UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village
2. **Under Total Irrigated Area:**

   **n** gives the number of responses to the query

   $\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the total irrigated area in hectares)

   **s. d**. is the standard deviation (calculated by the following formula) of the responses received: [Standard deviation is a measure of the variation of the responses]

$$\text{s. d.} = \sqrt{\frac{\sum(x-\bar{x})^2}{(n-1)}}$$, where n is the sample size and $\bar{x}$ is the sample mean

**Table-3.11: Information on Irrigation Sources [BATCH V]**

| District | Village | Location | Households | SOURCE OF IRRIGATION:_____ | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | PERENNIAL SOURCE | | | | | | | | | SEASONAL SOURCE | | | | | | | |
| | | | | Upper Reach | | | Middle Reach | | | Lower Reach | | | Upper Reach | | | Middle Reach | | | Lower Reach | | |
| | | | | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Ngaibang | MR | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Lura | LR | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| North Garo Hills | Merongdik | UR | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Samkalak Songma | MR | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Garo Thorikakona | LR | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| South West Khasi Hills | Wahkaji | UR | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Mawthabah | MR | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Langpa | LR | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL/AVG** | **PROJECT** | -- | **112** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL/AVG** | **(CONTROL)** | -- | **56** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Notes**: UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under Irrigated Area:**

**n** gives the number of responses to the query

$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the number of respondents citing the particular source of irrigation)

**s. d**. is the standard deviation (calculated by the following formula) of the responses received. (Standard deviation is a measure of the variation of the responses)

$$s.d. = \sqrt{\frac{\sum(x-\bar{x})^2}{(n-1)}}$$, where n is the sample size and $\bar{x}$ is the sample mean

**Table-3.12: Water Availability (for Seasonal Sources) [BATCH - V]**

| District | Village | Location | Households | Water Availability for Seasonal Source of Irrigation:_____ | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | February-March | | | | | | | | | June-July | | | | | | | | | | September-October | | | | | | | | |
| | | | | Upper Reach | | | Middle Reach | | | Lower Reach | | | Upper Reach | | | Middle Reach | | | Lower Reach | | | Upper Reach | | | Middle Reach | | | Lower Reach | | |
| | | | | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Ngaibang | MR | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Lura | LR | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| North Garo Hills | Merongdik | UR | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Samkalak Songma | MR | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Garo Thorikakona | LR | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| South West Khasi Hills | Wahkaji | UR | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Mawthabah | MR | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Langpa | LR | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL/AVG** | **(PROJECT)** | -- | **112** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL/AVG** | **(CONTROL)** | -- | **56** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Notes**: UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under Water Availability for Seasonal Source:**

**n** gives the number of responses to the query

$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the number of respondents citing the availability of irrigation for the particular seasonal source of irrigation)

**s. d**. is the standard deviation (calculated by the following formula) of the responses received

$$\text{s. d.} = \sqrt{\frac{\sum(x-\bar{x})^2}{(n-1)}}$$, where n is the sample size and $\bar{x}$ is the sample mean

Standard deviation is a measure of the variation of the responses

## *3.4. Drinking Water*

### 3.4.1. DRINKING WATER: SCARCITY MONTHS

The months of scarcity of drinking water range from February to May. This has been reported by the households covered by the present survey – All the households point out March and April as high scarcity months with very difficult access to drinking water.

**Project Villages**

In the Project Villages, the percentage of households reporting a scarcity of drinking water in the different months is given below:

| | |
|---|---|
| February | 28% |
| March | 100% |
| April | 100% |
| May | 12% |

In the above villages, March and April seem to be the months of extensive scarcity. Comparatively, lesser numbers of households have reported shortages in February or in May. No scarcity of drinking water has been reported in the other months.

**Control Villages**

In the Control Villages, the percentage of households reporting a scarcity of drinking water in the different months is given below:

| | |
|---|---|
| February | 27% |
| March | 100% |
| April | 100% |
| May | 37% |

In the control villages covered by the study, March and April seem to be months of widespread scarcity. Comparatively, lesser numbers of households have reported shortages in February and May.

No scarcity of drinking water has been reported in the other months of the year.

[**Note**: All the above figures have been rounded off.]

## Table-3.17 Drinking Water: Scarcity Months [BATCH-V]

| District | Village | Location | Households | Nos. Of Households citing month as a scarcity month | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | January | February | March | April | May | June | July | August | September | October | November | December |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | 0 | 0 | 20 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Ngaibang | MR | 4 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Lura | LR | 16 | 0 | 0 | 16 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| North Garo Hills | Merongdik | UR | 9 | 0 | 0 | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Samkalak Songma | MR | 12 | 0 | 0 | 9 | 9 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Garo Thorikakona | LR | 20 | 0 | 0 | 11 | 9 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| South West Khasi Hills | Wahkaji | UR | 21 | 0 | 21 | 21 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Mawthabah | MR | 5 | 0 | 5 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Langpa | LR | 5 | 0 | 5 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL/AVG** | **(PROJECT)** | **--** | **112** | **0** | **31** | **112** | **112** | **14** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | 0 | 0 | 20 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | 0 | 0 | 21 | 21 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | 0 | 15 | 15 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **56** | **0** | **15** | **56** | **56** | **21** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |

**Notes**:

1. UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

### 3.4.2. DRINKING WATER SOURCES (FEBRUARY-MARCH)

*Sources of Drinking Water*

**Project Villages**

The source of drinking water in the project villages is found to be as follows:

| | | | |
|---|---|---|---|
| Ring-well | 9% | PHE Tap | 2% |
| Spring | 78% | Spring water | 6% |
| River | 4% | | |

In the above villages, spring was widely used by the households for obtaining water during the dry period (February- March).

**Control Villages**

The source of drinking water in the control villages is found to be as follows:

| | | | |
|---|---|---|---|
| Ring-well | 37% | Tap | 2% |
| Spring | 33% | Common tap | 27% |

In the control villages too, a large majority of all the households depend upon ring-well and spring for drinking water in the dry period (February- March).
[**Note**: All figures have been rounded off. The total may exceed 100% at times.]

*Distance from Residence*

As per the survey, in the project villages the distance of source water from the residence was found to be 122.83 (metres) on an average whereas, in the control villages the distance of source water from the residence was found to be 127.5892 (metres) on an average.

The above are not big distances, being around 125 meters from the household (on an average). In dry period (before rainy season) - the sampled households do not have to go far to get water.

*Time Spent in Fetching Water*

As per the survey, on an average the time spent for fetching water in the project villages is found to be 10.942 (minutes) whereas, in the control villages the time spent for fetching water is 7.643 (minutes) on an average.

The above are not considerable time periods, being around 8 minutes (on an average). Thus, the sampled households do not have to spend much time to collect water in the dry period.

## Table-3.18 (A) Drinking Water Sources [BATCH-V] (Feb-March)

| District | Village | Location | Households | Source(s) of Drinking Water | Distance from Residence (m) | | | Time spent in Fetching Water (min) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | Spring | 16 | 44.176 | 65.449 | 16 | 4.412 | 4.912 |
| | | | | Tap Water | 2 | 75.00 | 21.213 | 2 | 8.50 | 21.121 |
| | | | | River | 2 | 0.0 | 0.0 | 2 | 0.0 | 0.0 |
| | Ngaibang | MR | 4 | Spring | 4 | 125.00 | 64.550 | 4 | 8.50 | 5.066 |
| | Lura | LR | 16 | Spring | 16 | 87.188 | 61.481 | 16 | 5.25 | 4.568 |
| North Garo Hills | Merongdik | UR | 9 | Spring | 9 | 16.556 | 32.913 | 9 | 2.556 | 3.245 |
| | Samkalak Songma | MR | 12 | River | 3 | 100.00 | 0.0 | 3 | 20.00 | 0.0 |
| | | | | Spring Water | 7 | 162.143 | 165.123 | 7 | 16.75 | 10.112 |
| | | | | Ring Well | 2 | 19.50 | 14.849 | 2 | 7.00 | 4.243 |
| | Garo Thorikakona | LR | 20 | Ring Well | 8 | 67.333 | 142.763 | 8 | 7.133 | 10.176 |
| | | | | Spring | 12 | 142.00 | 116.490 | 12 | 20.8 | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | Spring | 21 | 242.857 | 106.402 | 21 | 16.667 | 6.391 |
| | Mawthabah | MR | 5 | Spring | 5 | 175.00 | 43.301 | 5 | 13.60 | 68.00 |
| | Langpa | LR | 5 | Spring | 5 | 233.00 | 95.499 | 5 | 16.20 | 5.167 |
| **TOTAL/AVG** | **(PROJECT)** | **--** | **112** | **--** | **112** | **122.8347** | **--** | **112** | **10.942** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | Spring | 19 | 235.263 | 169.357 | 19 | 12.737 | 7.593 |
| | | | | Tap Water | 1 | 50.00 | 0.0 | 1 | 2.00 | 0.0 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | Ring Well | 21 | 10.952 | 43.807 | 21 | 0.905 | 3.345 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | Common Tap | 15 | 159.667 | 129.814 | 15 | 11.00 | 7.348 |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **56** | **--** | **56** | **127.5892** | **--** | **56** | **7.643** | **--** |

**Notes:**

1. UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village
2. Under Distance from Residence / Time spent in Fetching Water:

n gives the number of responses to the query

$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the distance of source in metres / time spent in minutes)

s. d. is the standard deviation (calculated by the following formula) of the responses received: [Standard deviation is a measure of the variation of the responses]

s. d. $= \sqrt{\frac{\sum(x-\bar{x})^2}{(n-1)}}$, where n is the sample size and $\bar{x}$ is the sample mean

### 3.4.3. DRINKING WATER SOURCES (JUNE-JULY)

*Sources of Drinking Water*

**Project Villages**

The source of drinking water in the project villages is found to be as follows:

| | | | |
|---|---|---|---|
| Ring-well | 9% | PHE Tap | 2% |
| Spring | 78% | Spring water | 6% |
| River | 4% | | |

In the above villages, spring was widely used by the households for obtaining water during the monsoon period (June-July).

**Control Villages**

The source of drinking water in the control villages is found to be as follows:

| | | | |
|---|---|---|---|
| Ring-well | 37% | Tap | 2% |
| Spring | 33% | Common tap | 27% |

In the control villages too, a large majority of all the households depend upon ring-well and spring for drinking water in the monsoon period (June-July).

[**Note**: All figures have been rounded off. The total may exceed 100% at times.]

*Distance from Residence*

As per the survey, in the project villages the distance of source water from the residence was found to be 122.83 (metres) on an average whereas, in the control villages the distance of source water from the residence was found to be 127.5892 (metres) on an average.

The above are not big distances, being around 125 meters from the household (on an average). In monsoon period (before rainy season) - the sampled households do not have to go far to get water.

*Time Spent in Fetching Water*

As per the survey, on an average the time spent for fetching water in the project villages is found to be 10.942 (minutes) whereas, in the control villages the time spent for fetching water is 7.643 (minutes) on an average.

The above are not considerable time periods, being around 8 minutes (on an average). Thus, the sampled households do not have to spend much time to collect water in the monsoon period.

## Table-3.19 (B) Drinking Water Sources (June - July) [BATCH-V]

| District | Village | Location | Households | Source(s) of Drinking Water | Distance from Residence (m) | | | Time spent in Fetching Water (min) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | Spring | 16 | 44.176 | 65.449 | 16 | 4.412 | 4.912 |
| | | | | Tap Water | 2 | 75.00 | 21.213 | 2 | 8.50 | 21.121 |
| | | | | River | 2 | 0.0 | 0.0 | 2 | 0.0 | 0.0 |
| | Ngaibang | MR | 4 | Spring | 4 | 125.00 | 64.550 | 4 | 8.50 | 5.066 |
| | Lura | LR | 16 | Spring | 16 | 87.188 | 61.481 | 16 | 5.25 | 4.568 |
| North Garo Hills | Merongdik | UR | 9 | Spring | 9 | 16.556 | 32.913 | 9 | 2.556 | 3.245 |
| | Samkalak Songma | MR | 12 | River | 3 | 100.00 | 0.0 | 3 | 20.00 | 0.0 |
| | | | | Spring Water | 7 | 162.143 | 165.123 | 7 | 16.75 | 10.112 |
| | | | | Ring Well | 2 | 19.50 | 14.849 | 2 | 7.00 | 4.243 |
| | Garo Thorikakona | LR | 20 | Ring Well | 8 | 67.333 | 142.763 | 8 | 7.133 | 10.176 |
| | | | | Spring | 12 | 142.00 | 116.490 | 12 | 20.8 | |
| South West Khasi Hills | Wahkaji | UR | 21 | Spring | 21 | 242.857 | 106.402 | 21 | 16.667 | 6.391 |
| | Mawthabah | MR | 5 | Spring | 5 | 175.00 | 43.301 | 5 | 13.60 | 68.00 |
| | Langpa | LR | 5 | Spring | 5 | 233.00 | 95.499 | 5 | 16.20 | 5.167 |
| **TOTAL/AVG** | **(PROJECT)** | **--** | **112** | **--** | **112** | **122.8347** | **--** | **112** | **10.942** | **--** |
| CONTROL VILLAGE | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | Spring | 19 | 235.263 | 169.357 | 19 | 12.737 | 7.593 |
| | | | | Tap Water | 1 | 50.00 | 0.0 | 1 | 2.00 | 0.0 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | Ring Well | 21 | 10.952 | 43.807 | 21 | 0.905 | 3.345 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | Common Tap | 15 | 159.667 | 129.814 | 15 | 11.00 | 7.348 |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **56** | **--** | **56** | **127.5892** | **--** | **56** | **7.643** | **--** |

**Notes:**

1.UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

2.Under Distance from Residence / Time spent in Fetching Water:

n gives the number of responses to the query

$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the distance of source in metres / time spent in minutes)

s.d.is the standard deviation (calculated by the following formula) of the responses received: [Standard deviation is a measure of the variation of the responses]

$s.d. = \sqrt{\frac{\sum(x-\bar{x})^2}{(n-1)}}$, where n is the sample size and $\bar{x}$ is the sample mean

### 3.4.4. DRINKING WATER SOURCES (SEPTEMBER-OCTOBER)

*Sources of Drinking Water*

**Project Villages**

The source of drinking water in the project villages is found to be as follows:

| | | | |
|---|---|---|---|
| Ring-well | 9% | PHE Tap | 2% |
| Spring | 78% | Spring water | 6% |
| River | 4% | | |

In the above villages, spring was widely used by the households for obtaining water during the rainy season (September-October).

**Control Villages**

The source of drinking water in the control villages is found to be as follows:

| | | | |
|---|---|---|---|
| Ring-well | 37% | Tap | 2% |
| Spring | 33% | Common tap | 27% |

In the control villages too, a large majority of all the households depend upon ring-well and spring for drinking water in the rainy season (September-October).
[**Note**: All figures have been rounded off. The total may exceed 100% at times.]

*Distance from Residence*

As per the survey, in the project villages the distance of source water from the residence was found to be 122.834 (metres) on an average whereas, in the control villages the distance of source water from the residence was found to be 127.589 (metres) on an average.

The above are not big distances, being around 125 meters from the household (on an average). In rainy season - the sampled households do not have to go far to get water.

*Time Spent in Fetching Water*

As per the survey, on an average the time spent for fetching water in the project villages is found to be 10.942 (minutes) whereas, in the control villages the time spent for fetching water is 7.643 (minutes) on an average.

The above are not considerable time periods, being around 8 minutes (on an average). Thus, the sampled households do not have to spend much time to collect water in the rainy season.

## Table-3.20 (C) Drinking Water Sources (September - October) [BATCH-V]

| District | Village | Location | Households | Source(s) of Drinking Water | Distance from Residence (m) | | | Time spent in Fetching Water (min) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | Spring | 16 | 44.176 | 65.449 | 16 | 4.412 | 4.912 |
| | | | | Tap Water | 2 | 75.00 | 21.213 | 2 | 8.50 | 21.121 |
| | | | | River | 2 | 0.0 | 0.0 | 2 | 0.0 | 0.0 |
| | Ngaibang | MR | 4 | Spring | 4 | 125.00 | 64.550 | 4 | 8.50 | 5.066 |
| | Lura | LR | 16 | Spring | 16 | 87.188 | 61.481 | 16 | 5.25 | 4.568 |
| North Garo Hills | Merongdik | UR | 9 | Spring | 9 | 16.556 | 32.913 | 9 | 2.556 | 3.245 |
| | Samkalak Songma | MR | 12 | River | 3 | 100.00 | 0.0 | 3 | 20.00 | 0.0 |
| | | | | Spring Water | 7 | 162.143 | 165.123 | 7 | 16.75 | 10.112 |
| | | | | Ring Well | 2 | 19.50 | 14.849 | 2 | 7.00 | 4.243 |
| | Garo Thorikakona | LR | 20 | Ring Well | 8 | 67.333 | 142.763 | 8 | 7.133 | 10.176 |
| | | | | Spring | 12 | 142.00 | 116.490 | 12 | 20.8 | |
| South West Khasi Hills | Wahkaji | UR | 21 | Spring | 21 | 242.857 | 106.402 | 21 | 16.667 | 6.391 |
| | Mawthabah | MR | 5 | Spring | 5 | 175.00 | 43.301 | 5 | 13.60 | 68.00 |
| | Langpa | LR | 5 | Spring | 5 | 233.00 | 95.499 | 5 | 16.20 | 5.167 |
| **TOTAL/AVG** | **(PROJECT)** | **--** | **112** | **--** | **112** | **122.834** | **--** | **112** | **10.942** | **--** |
| CONTROL VILLAGE | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | Spring | 19 | 235.263 | 169.357 | 19 | 12.737 | 7.593 |
| | | | | Tap Water | 1 | 50.00 | 0.0 | 1 | 2.00 | 0.0 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | Ring Well | 21 | 10.952 | 43.807 | 21 | 0.905 | 3.345 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | Common Tap | 15 | 159.667 | 129.814 | 15 | 11.00 | 7.348 |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **56** | **--** | **56** | **127.589** | **--** | **56** | **7.643** | **--** |

**Notes:**

1.UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

2.Under Distance from Residence / Time spent in Fetching Water:

n gives the number of responses to the query

$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the distance of source in metres / time spent in minutes)

s.d.is the standard deviation (calculated by the following formula) of the responses received: [Standard deviation is a measure of the variation of the responses]

$s.d. = \sqrt{\frac{\sum(x-\bar{x})^2}{(n-1)}}$, where n is the sample size and $\bar{x}$ is the sample mean

## 3.5. *Cooking Fuel [Batch V]*

### Type of Cooking Fuel

From Table-3.13 (given in the next page), it is found that in the project villages almost all the household use firewood as fuel for cooking. Some households also used kerosene and LPG as fuel for cooking. Similarly, in the control villages, almost all households use firewood and kerosene as fuel for cooking except for one household who use heater for cooking.

### Source of Cooking Fuel

As per the survey in the project villages, it is found that 54% of the households responded that Forest is the main source of cooking fuel; 39% households from Forest/Market; and 7% households from Market.

In the control villages, it is found that 63% of the households responded that their main source of cooking fuel is from Forest/Market; 36% from Forest; and 1% from Market.

### Nos. Of Households

In the project villages covered by the survey, it is found that 79% of the households have collected their cooking fuel whereas 21% of the households have purchased their cooking fuel. Similarly, in the control villages it is found that 84% of the households have collected their cooking fuel whereas 16% of the households have purchased their cooking fuel.

### Distance from Home

From the table given in the next page, it is found that in the project villages the average distance from home to collect the cooking fuel is 4.100 (approx. about 4 metres) and in the control villages is 2.835 (approx. about 3 metres).

### Quantity used per Month

It is found that in the project villages the average quantity of firewood used per month is 6232.894 pieces (approx. about 6233 pieces); kerosene is 10.00 (litres); and LPG is 1 cylinder. In control villages, the average quantity of firewood used per month is 5221.454 pieces (approx. about 5221 pieces) and kerosene is 5.00 (litres).

### Rate per Unit

As per the survey in the project villages, it is found that the average rate per unit of Firewood is 3736.871 pieces (approx. about Rs. 3,737 pieces); LPG is 608.571 (approx. about Rs. 609); and kerosene is 60 (Rs.). In control villages, the average rate per unit of Firewood is 1581.818 (approx. about Rs. 1,582); and kerosene is 50 (Rs.).

## Table-3.13: Source of Cooking Fuel [BATCH - V]
## Type of Fuel: Firewood / Dried Cow Dung / Other Biomass / Kerosene / LPG / Other

| District | Village | Location | Households | Type of Fuel | Source | Nos. Of Households | | Distance from Home (m) | | | Quantity Used Per Month | | | Rate per Unit (Rs per ____) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Purchased | Collected | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | Firewood | Forest | -- | 14 | 14 | 2.079 | 0.344 | 14 | 10168.42 | 2224.983 | 14 | 0.0 | 0.0 |
| | | | | LPG | Market | 6 | -- | 6 | 36.00 | 0.0 | 6 | 1.00 | 0.0 | 6 | 710.00 | 0.0 |
| | Ngaibang | MR | 4 | Firewood | Forest | -- | 4 | 4 | 1.75 | 0.500 | 4 | 11025.00 | 3150.00 | 4 | 0.0 | 0.0 |
| | Lura | LR | 16 | Firewood | Forest | -- | 16 | 16 | 1.875 | 0.500 | 16 | 10998.75 | 2244.644 | 16 | 0.0 | 0.0 |
| North Garo Hills | Merongdik | UR | 9 | Firewood | Forest | -- | 9 | 9 | 1.778 | 1.202 | 9 | 6000.00 | 2505.494 | 9 | 0.0 | 0.0 |
| | Samkalak Songma | MR | 12 | Firewood | Forest | -- | 12 | 12 | 1.417 | 0.996 | 12 | 5895.00 | 855.108 | 12 | 0.0 | 0.0 |
| | Garo Thorikakona | LR | 20 | Firewood | Forest / Market | 6 | 13 | 19 | 1.692 | 1.098 | 19 | 3953.846 | 2212.167 | 19 | 230.769 | 603.656 |
| | | | | LPG | Market | 1 | | 1 | 4.00 | 0.0 | 1 | 1.00 | 0.0 | 1 | 0.0 | 0.0 |
| South West Khasi Hills | Wahkaji | UR | 21 | Firewood | Forest / Market | 8 | 13 | 21 | 2.941 | 1.144 | 21 | 3047.619 | 898.676 | 21 | 15250.00 | 5650.537 |
| | Mawthabah | MR | 5 | Firewood | Forest / Market | 1 | 3 | 4 | 1.800 | 0.447 | 4 | 2880.00 | 438.178 | 4 | 16000.00 | 0.0 |
| | | | | Kerosene | Market | 1 | | 1 | 30.00 | 0.0 | 1 | 10.00 | 000 | 1 | 60.00 | 0.0 |
| | Langpa | LR | 5 | Firewood | Forest | | 5 | 5 | 1.800 | 0.447 | 5 | 2080.00 | 1453.272 | 5 | 0.0 | 0.0 |
| **TOTAL/AVG** | **(PROJECT)** | **--** | **112** | **Firewood** | **--** | **15** | **89** | **112** | **4.100** | | **104** | **6232.894** | | **104** | **3736.871** | **--** |
| | | | | **LPG** | **--** | **7** | **--** | | | | **7** | **1.00** | | **7** | **608.571** | **--** |
| | | | | **Kerosene** | **--** | **1** | **--** | | | | **1** | **10.00** | | **1** | **60.00** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | Firewood | Forest | --- | 20 | 20 | 3.00 | 0.0 | 20 | 11529.00 | 2000.258 | 20 | 0.0 | 0.0 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | Firewood | Forest / Market | 2 | 19 | 21 | 2.905 | 1.446 | 21 | 728.571 | 2602.526 | 21 | 142.857 | 451.189 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | Firewood | Forest / Market | 6 | 8 | 14 | 2.625 | 1.258 | 14 | 2950.00 | 1000.00 | 14 | 6000.00 | 4000.00 |
| | | | | Kerosene | Market | 1 | | 1 | 1.00 | 0.0 | 1 | 5.00 | 0.0 | 1 | 50.00 | 0.0 |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **56** | **Firewood** | **--** | **8** | **47** | **56** | **2.835** | **--** | **55** | **5221.454** | **--** | **55** | **1581.818** | **--** |
| | | | | **Kerosene** | **--** | **1** | **--** | | | | **1** | **5.00** | **--** | **1** | **50.00** | **--** |

**Notes**:

1. UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village
2. **Under Distance from Residence / Quantity Used Per Month / Rate per Unit:**
   **n** gives the number of responses to the query
   $\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the distance of source in metres / quantity used per month / rate per unit)
   **s. d.** is the standard deviation (calculated by the following formula) of the responses received: [Standard deviation is a measure of the variation of the responses]

   s. d. = $\sqrt{\frac{\sum(x-\bar{x})^2}{(n-1)}}$, where n is the sample size and $\bar{x}$ is the sample mean.

## *3.6. CROPS GROWN [Batch V]*

### 3.6.1. GROWING SEASON

**Findings**

Table-3.14 at overleaf gives the names of crops grown in the project villages and the control villages, along with their growing seasons. This is done for crops grown under irrigated conditions as well as for crops grown under non-irrigated conditions.

The discussion in the next few paragraphs analyses the above details.

**Analysis**

*Crops under Irrigated Conditions*

None of the sampled villages have any area under irrigation. Hence, there is no crop grown in these villages under irrigated conditions.

*Crops under Non-Irrigated Conditions*

It is seen that the villages usually grow rice under rain-fed (non-irrigated) conditions. Rice is grown under non-irrigated conditions in the project villages (except for some in the West Jaintia Hills, East Khasi Hills and West Khasi Hills districts), as well as in all the control villages.

In the villages covered by the study, the other crops cultivated under similar non-irrigated (rain-fed) conditions include the following:

- Jhum crops (a term used to denote various crops grown under 'slash and burn' practices);
- Maize;
- Potato;
- Turmeric & ginger;
- Betel leaf; and
- Vegetables (like tomato, cabbage, carrot, beans, yam, radish) etc.

All the project villages and control villages cultivate some of the above type of crops (i.e. those grown under non-irrigated conditions).

*Growing Season*

The growing season for the various crops is given in the above mentioned table. The same may be referred to for additional details in this regard.

Rice is usually grown under non-irrigated conditions from May to August-September. Other non-irrigated crops are grown during the rainy season. It may be noted that the hills of Meghalaya enjoy rainfall in most months of the year. Rainfall is quite regular from May onward.

## Table-3.14: Growing Season [Batch V]

| District | Village | Location | Households | Under Irrigated Conditions | | | Under Non-Irrigated Conditions | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Crop | Growing Season | | Crop | Growing Season | |
| | | | | | From | To | | From | To |
| **PROJECT VILLAGE** | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | --- | --- | --- | Pumpkin | March | April |
| | | | | --- | --- | --- | Chilli | March | April |
| | | | | --- | --- | --- | Yam, Oilseeds | March | October |
| | Ngaibang | MR | 4 | --- | --- | --- | --- | --- | --- |
| | Lura | LR | 16 | --- | --- | --- | --- | --- | --- |
| North Garo Hills | Merongdik | UR | 9 | --- | --- | --- | Rice | May | June |
| | Samkalak Songma | MR | 12 | --- | --- | --- | Rice | May | August |
| | Garo Thorikakona | LR | 20 | --- | --- | --- | Rice | May | August |
| South West Khasi Hills | Wahkaji | UR | 21 | --- | --- | --- | Maize | March | April |
| | | | | --- | --- | --- | Sweet Potato | June | July |
| | | | | --- | --- | --- | Yam, Oil seeds | March | April |
| | | | | --- | --- | --- | Chilli pepper, Tapioca | September | October |
| | Mawthabah | MR | 5 | --- | --- | --- | Bay Leaf | May | June |
| | Langpa | LR | 5 | --- | --- | --- | Beetle Leaf | May | June |
| | | | | --- | --- | --- | Sweet Potato | May | June |
| | | | | --- | --- | --- | Yam, Oil seeds | March | April |
| | | | | --- | --- | --- | Chilli pepper, Tapioca | April | June |
| **TOTAL/AVG** | **(PROJECT)** | **--** | **112** | **Listed at above** | **---** | **---** | **Listed at above** | **--** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | --- | --- | --- | --- | --- | --- |
| North Garo Hills | Rabha Thorikakona | CV | 21 | --- | --- | --- | Rice | May | June |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | --- | --- | --- | --- | --- | --- |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **56** | **Listed at above** | **---** | **---** | **Listed at above** | **---** | **---** |

**Notes**:

1. UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

### 3.6.2. CROP DETAILS - (A) IRRIGATED CONDITIONS

Not applicable.

There are no irrigated areas in the project and control villages. All agriculture is reported to be rain-fed. Table-3.15 gives the format of the reporting table. This table is available at the next page.

### 3.6.3. CROP DETAILS - (B) NON-IRRIGATED CONDITIONS

**Findings**

The findings in the above regard are furnished at Table-3.15. This table is available after Table-3.16 (which is given in the next page). It gives the following aspects of the crops grown under non-irrigated conditions in the sampled villages - project villages as well as control villages: (a) Area, (b) HYV Area, (c) Average Yield and (d) Income.

**Analysis**

*Area*

In the Project Villages, the average area under rice is 0.145 Ha (41 households), while that under other crops (jhum crops, vegetables etc.) is found to be 0.635 Ha. In the Control Villages, the average area under rice is about 0.221 Ha (21 households) while there are none in other crops.

*HYV Area*

There is no area under High Yielding Variety (HYV) crops in the sampled villages (project villages as well as control villages).

*Average Yield*

The average yield for the various crops (rice, jhum crops, vegetables etc.) has been tabulated in Table-3.16 and may be referred to therein.

*Income*

In the project villages: the average income from rice is only 943.902 (approx. about Rs. 944) per hectare, while other crops give an income of Rs. 2769.436 (approx. about Rs. 2,769)from each hectare under such crops. In the control villages: the average income from rice is only Rs. 6114.286 (approx. about Rs. 6,114) per hectare, while there are none in other crops.

It is found that only the households from North Garo Hills district are found to be cultivating rice crop. Due to its low incomes - only 37% of the sampled households in the project villages and about 38% in the control villages grow rice under non-irrigated conditions.

**Notes**:

1. *'Jhum crops' is a term used to denote various crops grown under 'slash and burn' practices in the hill-sides.*
2. *'Other crops' include such 'Jhum crops' as well as vegetables, bay leaf, maize, etc.*

## Table-3.15: CROP DETAILS - (A) IRRIGATED CONDITIONS [Batch V]

| District | Village | Location | Households | Crop | Area (Ha) | | | HYV Area (Ha) | | | Avg. Yield (Kg per Ha) | | | Income Rs per Ha | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Ngaibang | MR | 4 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Lura | LR | 16 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| North Garo Hills | Merongdik | UR | 9 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Samkalak Songma | MR | 12 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Garo Thorikakona | LR | 20 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| South West Khasi Hills | Wahkaji | UR | 21 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Mawthabah | MR | 5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Langpa | LR | 5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TOTAL/AVG** | **(PROJECT)** | **--** | **112** | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| North Garo Hills | Rabha Thorikakona | CV | 21 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **56** | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

**Notes**:
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under Area / Yield/ Income:**
**n** gives the number of responses to the query
$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the area / yield / income)
**s. d**. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

## Table-3.16: CROP DETAILS - (B) NON-IRRIGATED CONDITIONS [Batch V]

| District | Village | Location | Households | Crop | Area (Ha) | | | HYV Area (Ha) | | | Avg. Yield (Kg per Ha) | | | Income Rs per Ha | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | Pumpkin | 1 | 0.107 | 0.0 | --- | --- | --- | 1 | 50.00 | 0.0 | 1 | 250.00 | 0.0 |
| | | | | Chilli Pepper | 1 | 0.0 | 0.0 | --- | --- | --- | 1 | 20.00 | 0.0 | 1 | 16300.00 | 13152.186 |
| | | | | Yam, Oilseeds | 1 | 0.0 | 0.0 | --- | --- | --- | 1 | 456.00 | 0.0 | 1 | 10900.00 | 0.0 |
| | Ngaibang | MR | 4 | | | | | --- | --- | --- | | | | | | |
| | Lura | LR | 16 | | | | | --- | --- | --- | | | | | | |
| North Garo Hills | Merongdik | UR | 9 | Rice | 9 | 0.151 | 0.198 | --- | --- | --- | 9 | 104.444 | 197.933 | 9 | 0.0 | 0.0 |
| | Samkalak Songma | MR | 12 | Rice | 12 | 0.167 | 0.175 | --- | --- | --- | 12 | 220.00 | 289.702 | 12 | 3225.00 | 5959.580 |
| | Garo Thorikakona | LR | 20 | Rice | 20 | 0.128 | 0.296 | --- | --- | --- | 20 | 46.00 | 126.674 | 20 | 0.0 | 0.0 |
| South West Khasi Hills | Wahkaji | UR | 21 | Maize | 17 | 0.591 | 1.262 | --- | --- | --- | 16 | 52.222 | 66.598 | 17 | 581.818 | 1333.689 |
| | | | | Sweet Potato | 15 | 0.600 | 1.352 | --- | --- | --- | 15 | 46.667 | 47.223 | 15 | 700.00 | 97.223 |
| | | | | Yam | 19 | 0.726 | 1.183 | --- | --- | --- | 19 | 40.526 | 75.091 | 19 | 810.526 | 1501.812 |
| | | | | Mustard, Chilli, Tapioca | 20 | 0.715 | 1.253 | --- | --- | --- | 19 | 36.842 | 64.640 | 20 | 1755.00 | 2626.680 |
| | Mawthabah | MR | 5 | Bay Leaf | 2 | 1.00 | 0.0 | --- | --- | --- | 2 | 450.00 | 70.711 | 2 | 7300.00 | 2404.163 |
| | Langpa | LR | 5 | Sweet Potato | 1 | 0.0 | 0.0 | --- | --- | --- | 1 | 150.00 | 0.0 | 1 | 7500.00 | 0.0 |
| | | | | Yam | 3 | 0.500 | 0.707 | --- | --- | --- | 3 | 100.00 | 100.00 | 3 | 5000.00 | 5000.00 |
| | | | | Mustard, Chilli pepper, Tapioca | 3 | 0.500 | 0.707 | --- | --- | --- | 3 | 183.333 | 150.728 | 3 | 3500.00 | 4821.825 |
| | | | | Betel Leaf | 2 | 0.750 | 0.350 | --- | --- | --- | 2 | 50.00 | 0.0 | 2 | 30000.00 | 0.0 |
| | | | | Bay Leaf | 2 | 0.750 | 0.354 | --- | --- | --- | 2 | 500.00 | 282.843 | 2 | 17500.00 | 9899.495 |
| **TOTAL/AVG.** | **(PROJECT)** | **--** | **112** | **Rice** | **41** | **0.145** | **---** | --- | --- | --- | | | | **41** | **943.902** | **---** |
| | | | | **Pumpkin** | **87** | **0.635** | **---** | --- | --- | --- | **--** | **Different crops - hence not calculated** | **--** | **87** | **2769.436** | **---** |
| | | | | **Chilli Pepper** | | | | | | | | | | | | |
| | | | | **Yam, Oil Seeds** | | | | | | | | | | | | |
| | | | | **Maize** | | | | | | | | | | | | |
| | | | | **Sweet Potato** | | | | | | | | | | | | |

| District | Village | Location | Households | Crop | Area (Ha) | | | HYV Area (Ha) | | | Avg. Yield (Kg per Ha) | | | Income Rs per Ha | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | |
| | | | | **Mustard, Tapioca**<br>**Bay Leaf**<br>**Betel Leaf** | | | | | | | | | | | | |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| North Garo Hills | Rabha Thorikakona | CV | 21 | Rice | 21 | 0.221 | 0.379 | | | | 21 | 594.286 | 1093.931 | 21 | 6114.286 | 18959.807 |
| South West Khasi Hills. | Mawkhlaitngap | CV | 15 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TOTAL/AVG.** | **(CONTROL)** | **--** | **56** | **Rice** | **21** | **0.221** | **---** | --- | --- | --- | --- | --- | --- | **21** | **6114.286** | **---** |

**Notes**:
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village
(*) If more than one crop - the number of rows for concerned village is increased.

**Under Area / Yield/ Income:**
**n** gives the number of responses to the query
$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the area / yield / income)
**s. d**. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

## 3.7. ORCHARD, PLANTATION CROPS & AGRO-FORESTRY

**Findings**

As per the survey, it is found that Orange, Arecanut, Rubber, Jackfruit, Mango and Rubber are found in the project villages whereas only Arecanut and Rubber are found in the control villages. This is in accordance with the responses made by each household in the project as well as control village. Table-3.21 (at overleaf) gives the details of orchard, crop plantation and agro-forestry for the following parameters:

- Area covered
- Number of trees
- Output
- Income

**Analysis**

*Area Covered*

Area of orchard plantation under East Jaintia Hills and South West Khasi Hills is found to be unsatisfactory with only orange growing in the area in both project and control villages. It is found that the average area covered in project village 0.188Ha (approx. about 1880 $m^2$ or 20236.151 $ft^2$) and in control village is 0.154Ha (approx. about 1540 $m^2$ or 16576.422 $ft^2$).

*Number of Trees*

The number of trees in a particular area falling under plantations depends on the location. Arecanut are commonly grown in North Garo Hills with a good number of plantations. The average number of trees planted in project village is 111.798 (approx. about 112 nos.) and in control village is 67.000 (about 67 nos.).

*Output*

Comparing the output from both the project and control village, the output of project village is higher than that of the control village. From the table below, it can be seen that Bam Khongsi and Mawkhlaitngap from the control village do not have orchard plantation.

*Income*

It is found that the average income per year is Rs. 22250.510 (approx. about Rs. 22251) in project village whereas in control village is Rs. 7047.500 (approx. about Rs. 7048). It is also found that average income from areca nut and rubber which is grown in North Garo Hills is high due to large scale plantation as compared to other districts in both project and control village; and as result better livelihood earnings.

## Table-3.21 Details of orchard, plantation crops & agro-forestry [BATCH-V]

| District | Village | Location | Households | Plant | Area Covered (Ha) | | | No. of Trees | | | Output (unit) | | | Income Rs | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | Orange | 19 | 0.092 | 0.279 | 19 | 34.211 | 86.684 | 19 | 789.474 | 3441.236 | 19 | 3157.895 | 13764.944 |
| | Ngaibang | MR | 4 | | | | | | | | | | | | | |
| | Lura | LR | 16 | | | | | | | | | | | | | |
| North Garo Hills | Merongdik | UR | 9 | Arecanut | 8 | 0.378 | 0.381 | 8 | 200 | 350.510 | 8 | 525 | 533.854 | 7 | 70833.333 | 92000.906 |
| | | | | Rubber | 4 | 0.64 | 0.185 | 4 | 500 | 1000 | 4 | 1175 | 1885.691 | 4 | 148000.00 | 153883.073 |
| | | | | Jackfruit | 1 | 0.096 | 0 | 1 | 50 | 0 | 1 | 30 | 0 | 1 | 150 | 0 |
| | Samkalak Songma | MR | 12 | Arecanut | 12 | 0.3 | 0.221 | 12 | 181.667 | 173.982 | 12 | 250 | 267.038 | 12 | 12916.667 | 13681.164 |
| | Garo Thorikakona | LR | 20 | Arecanut | 16 | 0.18 | 0.152 | 16 | 160.125 | 395.363 | 15 | 69.333 | 134.773 | 15 | 3666.667 | 7047.458 |
| | | | | Rubber | 6 | 0.267 | 0.194 | 6 | 241 | 395.785 | 5 | 134.6 | 260.818 | 5 | 14860.00 | 24088.379 |
| | | | | Jackfruit | 1 | 0.12 | 0 | 1 | 4 | 0 | -- | -- | -- | -- | -- | -- |
| | | | | Mango | 1 | 0.032 | 0 | 1 | 5 | 0 | -- | -- | -- | -- | -- | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | Oranges | 21 | 0 | 0 | 21 | 0.476 | 2.182 | 21 | 33.333 | 152.752 | -- | -- | -- |
| | Mawthabah | MR | 5 | Oranges | 5 | 0.4 | 0.548 | 5 | 0.4 | 0.548 | 5 | 140 | 194.936 | 2 | 7000.00 | 1414.214 |
| | Langpa | LR | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **TOTAL/AVG** | **(PROJECT)** | -- | 112 | Orange, Arecanut Rubber,Jackfruit,Mango | **94** | **0.188** | **--** | **94** | **111.798** | **--** | **90** | **394.444** | **--** | **65** | **22250.510** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| North Garo Hills | Rabha Thorikakona | CV | 21 | Arecanut | 21 | 0.149 | 0.310 | 21 | 28.571 | 59.857 | 21 | 83.810 | 262.268 | 21 | 3895.238 | 13151.368 |
| | | | | Rubber | 19 | 0.16 | 0.244 | 19 | 109.474 | 159.947 | 19 | 76.842 | 203.771 | 19 | 10531.579 | 28029.2 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **TOTAL/AVG** | **(CONTROL)** | -- | 56 | Arecanut, Rubber | **40** | **0.154** | **--** | **40** | **67.000** | **--** | **40** | **80.5002** | **--** | **40** | **7047.500** | **--** |

**Notes:**
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under Area / Trees / Output / Income:**
n gives the number of responses to the query
$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the area / trees / output / income)
s. d. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

## 3.8. *Livestock*

### Findings

The tables from Table-3.22.1 to Table-3.22.5 give the findings of the following livestock parameters: (a) Nos. owned; (b) Output and (c) Income for the following types of livestock:

| | |
|---|---|
| Table-3.22.1 | Cattle |
| Table-3.22.2 | Pigs |
| Table- 3.22.3 | Poultry |
| Table- 3.22.4 | Buffaloes |
| Table- 3.22.5 | Goats |

The following gives a summary of the findings in the above regard. This has been done separately for the project villages and control villages.

**Summary of Findings for Livestock [Batch V]**

| Types of Livestock | Number owned | | Output | | Income | |
|---|---|---|---|---|---|---|
| | No of Household | Average | No of Household | Average | No of Household | Average |
| **PROJECT** | | | | | | |
| **Cattle** | 65 | 4.838 | 62 | 3.968 | 52 | 61057.692 |
| **Pigs** | 78 | 1.286 | 77 | 1.095 | 77 | 9177.109 |
| **Poultry** | 101 | 10.030 | 72 | 9.806 | 72 | 4359.477 |
| **Buffaloes** | 25 | 5.240 | 25 | 5.240 | 25 | 43520.00 |
| **Goats** | 26 | 5.193 | 26 | 5.193 | 26 | 7596.154 |
| **CONTROL** | | | | | | |
| **Cattle** | 47 | 1.453 | 47 | 1.453 | 47 | 3957.448 |
| **Pigs** | 51 | 0.740 | 51 | 0.510 | 51 | 3705.883 |
| **Poultry** | 51 | 5.667 | 51 | 5.667 | 51 | 1543.231 |
| **Buffaloes** | 14 | 0.143 | 14 | 0.143 | 14 | 1785.714 |
| **Goats** | 28 | 0.608 | 28 | 0.608 | 28 | 940.934 |

### Analysis

It is found that the following types of livestock are commonly owned in the sampled villages: cattle, pigs, poultry and goats. No villages have households possessing buffaloes in both Project and Control villages. The sampled households possessing livestock obtain considerable income from the ownership of such livestock - especially from cattle in the both project control villages.

## Table-3.22.1 Details of Livestock- Cattle [BATCH-V]

| District | Village | Location | Households | Type of Livestock | Nos. Owned | | | Output | | | | Income (Rs.) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | n | $\bar{x}$ | SD | Unit of Output | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | Upper Reach | 20 | Cattle | 18 | 8.889 | 14.696 | Nos. | 18 | 8.889 | 14.696 | 18 | 43055.556 | 57564.77 |
| | Ngaibang | Middle Reach | 4 | Cattle | 1 | 10.00 | 0 | Nos. | 1 | 10 | 0 | 1 | 24000.00 | 0 |
| | Lura | Lower Reach | 16 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| North Garo Hills | Merongdik | Upper Reach | 9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Samkalak Songma | Middle Reach | 12 | Cattle | 12 | 1.667 | 2.060 | Nos. | 12 | 1.667 | 2.060 | 12 | 1541.667 | 3107.603 |
| | Garo Thorikakona | Lower Reach | 20 | Cattle | 20 | 1.0 | 1.892 | Nos. | 20 | 0.15 | 0.671 | -- | -- | -- |
| South West Khasi Hills | Wahkaji | Upper Reach | 21 | Cattle | 12 | 9.75 | 14.529 | Nos. | 9 | 3.444 | 8.616 | 12 | 93333.33 | 135914.41 |
| | Mawthabah | Middle Reach | 5 | Cattle | 2 | 11.0 | 12.728 | Nos. | 2 | 11.0 | 12.728 | 9 | 137500.00 | 159099.03 |
| | Langpa | Lower Reach | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **TOTAL /AVG** | **(PROJECT)** | **--** | **112** | **--** | **65** | **4.838** | **--** | **--** | **62** | **3.968** | **--** | **52** | **61057.692** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | Control Village | 20 | Cattle | 14 | 0.071 | 0.267 | Nos. | 14 | 0.071 | 0.267 | 14 | 714.286 | 2672.612 |
| North Garo Hills | Rabha Thorikakona | Control Village | 21 | Cattle | 21 | 2.586 | 3.140 | Nos. | 21 | 2.586 | 3.140 | 21 | 1714.286 | 4328.890 |
| South West Khasi Hills | Mawkhlaitngap | Control Village | 15 | Cattle | 12 | 1.083 | 2.065 | Nos. | 12 | 1.083 | 2.065 | 12 | 11666.67 | 2243.275 |
| **TOTAL/AVG.** | **(CONTROL)** | **--** | **56** | **--** | **47** | **1.453** | **--** | **--** | **47** | **1.453** | **--** | **47** | **3957.448** | **--** |

**Notes:**
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

Under Nos. Owned / Output / Income:
n gives the number of responses to the query
$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the Nos. Owned / output / income)
s. d. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

## Table-3.22.2 Details of Livestock- Pigs [BATCH-V]

| District | Village | Location | Households | Type of Livestock | Nos. Owned | | | Output | | | | Income (Rs.) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | n | $\bar{x}$ | SD | Unit of Output | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | Upper Reach | 20 | Pigs | 11 | 0.3 | 0.675 | Nos. | 11 | 0.3 | 0.675 | 11 | 3300.00 | 7803.845 |
| | Ngaibang | Middle Reach | 4 | Pigs | 2 | 8.5 | 2.121 | Nos. | 2 | 8.5 | 2.121 | 2 | 90000.00 | 42426.407 |
| | Lura | Lower Reach | 16 | Pigs | 6 | 1.833 | 1.835 | Nos. | 6 | 1.833 | 1.835 | 6 | 21000.00 | 21419.617 |
| North Garo Hills | Merongdik | Upper Reach | 9 | Pigs | 9 | 0.889 | 0.782 | Nos. | 9 | 0.889 | 3.308 | 9 | 2333.333 | 3741.657 |
| | Samkalak Songma | Middle Reach | 12 | Pigs | 12 | 2.083 | 2.151 | Nos. | 12 | 1.0 | 2.216 | 12 | 2825.00 | 4350.993 |
| | Garo Thorikakona | Lower Reach | 20 | Pigs | 20 | 0.55 | 0.686 | Nos. | 19 | 0.421 | 0.692 | 19 | 3421.053 | 5919.045 |
| South West Khasi Hills | Wahkaji | Upper Reach | 21 | Pigs | 13 | 1.154 | 1.642 | Nos. | 13 | 1.154 | 1.642 | 13 | 7192.308 | 12412.256 |
| | Mawthabah | Middle Reach | 5 | Pigs | 3 | 2 | 0 | Nos. | 3 | 2 | 0 | 3 | 16000.00 | 0 |
| | Langpa | Lower Reach | 5 | Pigs | 2 | 2 | 0 | Nos. | 2 | 2 | 0 | 2 | 16000.00 | 0 |
| **TOTAL /AVG.** | **(PROJECT)** | **--** | **112** | **--** | **78** | **1.286** | **--** | **--** | **77** | **1.095** | **--** | **77** | **9177.109** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | Control Village | 20 | Pigs | 18 | 0.444 | 0.856 | Nos. | 18 | 0.444 | 0.856 | 18 | 3611.111 | 6774.857 |
| North Garo Hills | Rabha Thorikakona | Control Village | 21 | Pigs | 21 | 1.35 | 0.933 | Nos. | 21 | 0.762 | 0.995 | 21 | 5476.191 | 6830.952 |
| South West Khasi Hills | Mawkhlaitngap | Control Village | 15 | Pigs | 12 | 0.167 | 0.5777 | Nos. | 12 | 0.167 | 0.577 | 12 | 750.00 | 2496.151 |
| **TOTAL/AVG.** | **(CONTROL)** | **--** | **56** | **--** | **51** | **0.740** | **--** | **--** | **51** | **0.510** | **--** | **51** | **3705.883** | **--** |

**Notes:**

UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under Nos. Owned / Output / Income:**

n gives the number of responses to the query

$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the Nos. Owned / output / income)

s. d. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

## Table-3.22.3 Details of Livestock- Poultry [BATCH-V]

| District | Village | Location | Households | Type of Livestock | Nos. Owned | | | Output | | | | Income (Rs.) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | n | $\bar{x}$ | SD | Unit of Output | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | Upper Reach | 20 | Poultry | 18 | 11.278 | 9.578 | Nos. | 18 | 11.278 | 9.578 | 18 | 3182.353 | 2634.444 |
| | Ngaibang | Middle Reach | 4 | Poultry | 2 | 13.5 | 2.121 | Nos. | 2 | 13.5 | 2.121 | 2 | 5500.00 | 707.107 |
| | Lura | Lower Reach | 16 | Poultry | 14 | 11.429 | 9.296 | Nos. | 14 | 10.714 | 9.384 | 14 | 2971.429 | 1554.027 |
| North Garo Hills | Merongdik | Upper Reach | 9 | Poultry | 9 | 17.556 | 16.942 | Nos. | | | | | | |
| | Samkalak Songma | Middle Reach | 12 | Poultry | 12 | 1.667 | 1.969 | Nos. | 12 | 1.667 | 1.969 | 12 | 1541.667 | 3107.603 |
| | Garo Thorikakona | Lower Reach | 20 | Poultry | 20 | 6.95 | 6.194 | Nos. | -- | -- | -- | -- | -- | -- |
| South West Khasi Hills | Wahkaji | Upper Reach | 21 | Poultry | 16 | 10.625 | 13.544 | Nos. | 16 | 10.625 | 13.544 | 16 | 6093.75 | 10413.483 |
| | Mawthabah | Middle Reach | 5 | Poultry | 5 | 14.8 | 7.918 | Nos. | 5 | 14.8 | 7.918 | 5 | 6300.00 | 2991.655 |
| | Langpa | Lower Reach | 5 | Poultry | 5 | 12.4 | 13.557 | Nos. | 5 | 12.4 | 5.679 | 5 | 11300.00 | 12784.757 |
| **TOTAL /AVG** | **(PROJECT)** | **--** | **112** | **--** | **101** | **10.030** | **--** | **--** | **72** | **9.806** | **--** | **72** | **4359.477** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | Control Village | 20 | Poultry | 18 | 1.889 | 3.708 | Nos. | 18 | 1.889 | 3.708 | 18 | 238.889 | 1386.124 |
| North Garo Hills | Rabha Thorikakona | Control Village | 21 | Poultry | 20 | 11.45 | 12.746 | Nos. | 20 | 11.45 | 12.746 | 20 | 595.2381 | 1454.468 |
| South West Khasi Hills | Mawkhlaitngap | Control Village | 15 | Poultry | 13 | 2.0 | 3.777 | Nos. | 13 | 2.0 | 3.559 | 13 | 4807.692 | 11466.506 |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **56** | **--** | **51** | **5.667** | **--** | **--** | **51** | **5.667** | **--** | **51** | **1543.231** | **--** |

**Notes:**

UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

Under Nos. Owned / Output / Income:
n gives the number of responses to the query

$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the Nos. Owned / output / income)
s. d. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

## Table-3.22.4 Details of Livestock- Buffaloes [BATCH-V]

| District | Village | Location | Households | Type of Livestock | Nos. Owned | | | Output | | | | Income (Rs.) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | n | $\bar{x}$ | SD | Unit of Output | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **Project Village** | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | Upper Reach | 20 | Buffaloes | 13 | 6 | 9.422 | Nos. | 13 | 6 | 9.422 | 13 | 46153.846 | 68348.185 |
| | Ngaibang | Middle Reach | 4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Lura | Lower Reach | 16 | Buffaloes | 12 | 4.417 | 3.423 | Nos. | 12 | 4.417 | 3.423 | 12 | 40666.667 | 29830.836 |
| North Garo Hills | Merongdik | Upper Reach | 9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Samkalak Songma | Middle Reach | 12 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Garo Thorikakona | Lower Reach | 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| South West Khasi Hills | Wahkaji | Upper Reach | 21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Mawthabah | Middle Reach | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Langpa | Lower Reach | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **TOTAL /AVG** | **(PROJECT)** | **--** | **112** | **--** | **25** | **5.240** | **--** | **--** | **25** | **5.240** | **--** | **25** | **43520** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | Control Village | 20 | Buffaloes | 14 | 0.143 | 0.535 | Nos. | 14 | 0.143 | 0.535 | 14 | 1785.714 | 6681.531 |
| North Garo Hills | Rabha Thorikakona | Control Village | 21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| South West Khasi Hills | Mawkhlaitngap | Control Village | 15 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **56** | **--** | **14** | **0.143** | **--** | **--** | **14** | **0.143** | **--** | **14** | **1785.714** | **--** |

**Notes:**
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under Nos. Owned / Output / Income:**
n gives the number of responses to the query
$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the Nos. Owned / output / income)
s. d. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

## Table-3.22.5 Details of Livestock- Goats [BATCH-V]

| District | Village | Location | Households | Type of Livestock | Nos. Owned | | | Output | | | | Income (Rs.) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | N | $\bar{x}$ | SD | Unit of Output | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | Upper Reach | 20 | Goats | 10 | 10 | 0 | Nos. | 10 | 10 | 0 | 10 | 12500.00 | 0 |
| | Ngaibang | Middle Reach | 4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Lura | Lower Reach | 16 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| North Garo Hills | Merongdik | Upper Reach | 9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Samkalak Songma | Middle Reach | 12 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Garo Thorikakona | Lower Reach | 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| South West Khasi Hills | Wahkaji | Upper Reach | 21 | Goats | 16 | 2.188 | 2.813 | Nos. | 16 | 2.188 | 2.813 | 16 | 4531.25 | 518.598 |
| | Mawthabah | Middle Reach | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Langpa | Lower Reach | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **TOTAL /AVG** | **(PROJECT)** | **--** | **112** | **--** | **26** | **5.193** | **--** | **--** | **26** | **5.193** | **--** | **26** | **7596.154** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | Control Village | 20 | Goats | 14 | 0.429 | 1.604 | Nos. | 14 | 0.429 | 1.604 | 14 | 535.714 | 2004.458 |
| North Garo Hills | Rabha Thorikakona | Control Village | 21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| South West Khasi Hills | Mawkhlaitngap | Control Village | 15 | Goats | 14 | 0.786 | 1.295 | Nos. | 14 | 0.786 | 1.295 | 14 | 1346.154 | 2625.076 |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **56** | **--** | **28** | **0.608** | **--** | **--** | **28** | **0.608** | **--** | **28** | **940.934** | **--** |

**Notes:**

UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under Nos. Owned / Output / Income:**

n gives the number of responses to the query

$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the Nos. Owned / output / income)

s. d. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

## *3.9. FISHERY*

### 3.9.1. AREA UNDER FISHERY, TYPE OF WATER BODY & SIZE

**Findings**

Table-3.23, available at overleaf, gives the area under fishery in the studied villages. Table-3.24 furnishes the output and income details. Local fish, Silver carp, Grass carp, Common carp, Katla (Indian carp) are the most commonly type of fish found in both projects and control villages.

**Analysis**

As per the survey, on an average, the area under fishery for the project area is 0.006 Ha where as the average in the control village area is 0.016. The average output) is the project village is 12.981(approx 13 kg) and 44 (approx 44 kg) in the control village. The average income from the project village is Rs. 3992.188 and Rs. 6310 from the control village.

Saipung is the only village from East Jaintia Hills which has some fishery area. It may be seen that there are no areas under fishery in South West Khasi both in project and control villages.

## Table-3.23 AREA UNDER FISHERY, TYPE OF WATER BODY & SIZE [BATCH-V]

| District | Village | Location | Households | Area under Fishery (Ha) | | | Types of Water Bodies |
|---|---|---|---|---|---|---|---|
| | | | | n | $\bar{x}$ | SD | |
| **PROJECT VILLAGE** | | | | | | | |
| East Jaintia Hills | Saipung | Upper Reach | 20 | 20 | 0.025 | 0.077 | -- |
| | Ngaibang | Middle Reach | 4 | 4 | 0.0 | 0.0 | -- |
| | Lura | Lower Reach | 16 | 16 | 0.0 | 0.0 | -- |
| North Garo Hills | Merongdik | Upper Reach | 9 | 9 | 0.009 | 0.027 | -- |
| | Samkalak Songma | Middle Reach | 12 | 12 | 0.0 | 0.0 | -- |
| | Garo Thorikakona | Lower reach | 20 | 20 | 0.008 | 0.036 | -- |
| South West Khasi Hills | Wahkaji | Upper reach | 21 | 21 | 0.0 | 0.0 | -- |
| | Mawthabah | Middle Reach | 5 | 5 | 0.0 | 0.0 | -- |
| | Langpa | Lower reach | 5 | 5 | 0.0 | 0.0 | -- |
| **TOTAL/AVG** | **(PROJECT)** | **--** | **112** | **112** | **0.006** | **--** | **--** |
| **CONTROL VILLAGE** | | | | | | | |
| East Jaintia Hills | Bam Khongsi | Control village | 20 | 20 | 0.0 | 0.0 | -- |
| North Garo Hills | Rabha Thorikakona | Control village | 21 | 21 | 0.042 | 0.090 | -- |
| South West Khasi Hills | Mawkhlaitngap | Control village | 15 | 15 | 0.0 | 0.0 | -- |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **56** | **56** | **0.016** | **--** | **--** |

**Notes:**

UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under Nos. Owned / Output / Income:**

n gives the number of responses to the query

$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the Nos. Owned / output / income)

s. d. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

## Table-3.24 TYPES OF FISH, OUTPUT & INCOME [BATCH-V]

| District | Village | Location | Households | Type of Fish | Period of Culture | | Output (Kg) | | | Income (Rs.) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | From | To | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | Local fish | June | July | 20 | 14.750 | 44.882 | 20 | 3687.500 | 11220.540 |
| | Ngaibang | MR | 4 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Lura | LR | 16 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| North Garo Hills | Merongdik | UR | 9 | Grass carp, Silver carp | April | May | -- | -- | -- | -- | -- | -- |
| | Samkalak Songma | MR | 12 | Grass carp | February | October | 12 | 30.000 | 0.0 | 12 | 4500.000 | 0.0 |
| | Garo Thorikakona | LR | 20 | Katla | July | July | 20 | 1.00 | 0.0 | -- | -- | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Mawthabah | MR | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Langpa | LR | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **TOTAL /AVG** | **(PROJECT)** | **--** | **112** | **--** | **--** | **--** | **52** | **12.98077** | **--** | **32** | **3992.188** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | | | | | | | | | |
| North Garo Hills | Rabha Thorikakona | CV | 21 | Local fish, Silver carp, Grass carp Common carp Katla | April<br>April<br>February<br>April | April<br>April<br>November<br>April | 21 | 44.00 | 0.0 | 21 | 6310.00 | 0.0 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **TOTAL /AVG** | **(CONTROL)** | **--** | **56** | **--** | **--** | **--** | **21** | **44** | | **21** | **6310** | **--** |

**Notes:**

UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under Nos. Owned / Output / Income:**

n gives the number of responses to the query

$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the Nos. Owned / output / income)

s. d. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

## *3.10. NON TIMBER FOREST PRODUCT*

### 3.10.1. OUTPUT DETAILS

**Findings**

Broom and Bamboo is the only Non Timber Forest Product found for Batch V in the Villages. Table-3.25 gives the findings of the following Non Timber Forest Product parameters:

- Quantity Collected
- Quantity Sold
- Income from Sale

**Analysis**

Project Village: From the table below (Table-3.25), it can be noted that broom cultivation is highly practise in South West Khasi Hills, on an average the highest quantity collected for broom is 1700 kg in Langpa village with an average income of Rs. 110500 per year, South West Khasi Hills. The lowest quantity collected for broom is approx 43 kg per year in Saipung village, East Jaintia Hills. Bamboo is grown only in Merongdik, North Garo Hills as per the survey carried out among the project villages.

The total average income of Non Timber Forest Product (NTFP) sale per year in the project villages is 27254.69 (approx Rs. 27255).

Control Village: In the Control village, Bam Khongsi in East Jaintia Hills and Rabha Thorikakona in North Garo Hills have no Non Timber Forest Product (NTFP). The total average income of Non Timber Forest Product sale per year in the control villages (Mawkhlaitngap, South West Khasi Hills) is Rs. 9687.50

## Table-3.25 Output Details [BATCH-V]

| District | Village | Location | Households | Type of NTFP | Unit of Quantity | Quantity Collected | | | Quantity Sold | | | Income from Sale(Rs.) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | Broom | Kg | 20 | 43 | 99.107 | 20 | 43 | 99.107 | 20 | 2300 | 5272.571 |
| | Ngaibang | MR | 4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Lura | LR | 16 | Broom | Kg | 14 | 57.143 | 128.388 | 14 | 57.143 | 128.388 | 14 | 3428.571 | 7703.289 |
| North Garo Hills | Merongdik | UR | 9 | Bamboo | Pieces | 9 | 222.222 | 666.667 | -- | -- | -- | -- | -- | -- |
| | | | | Broom | Kg | 1 | 150 | 0 | 1 | 150 | 0 | 1 | 300.00 | 0 |
| | Samkalak Songma | MR | 12 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Garo Thorikakona | LR | 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | Broom | Kg | 19 | 684.211 | 597.461 | 19 | 684.211 | 597.461 | 19 | 47552.632 | 37966.321 |
| | Mawthabah | MR | 5 | Broom | Kg | 5 | 440 | 397.492 | 5 | 440 | 397.492 | 5 | 38800.00 | 28245.7969 |
| | Langpa | LR | 5 | Broom | Kg | 5 | 1700 | 1933.908 | 5 | 1700 | 1933.908 | 5 | 110500 | 125704.017 |
| **TOTAL /AVG** | **(PROJECT)** | **--** | **112** | **--** | **--** | **73** | **8.834713** | **--** | **64** | **398.5939** | **--** | **64** | **27254.69** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| North Garo Hills | Rabha Thorikakona | CV | 21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | Broom | Kg | 16 | 156.25 | 171.148 | 16 | 156.25 | 171.148 | 16 | 9687.5 | 10243.494 |
| **TOTAL/AVG** | **(CONTROL)** | **--** | **56** | **--** | **--** | **16** | **156.25** | **--** | **16** | **156.25** | **--** | **16** | **9687.5** | **--** |

**Notes:**
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under Quantity / Income:**
n gives the number of responses to the query
$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the Quantity / income)
s. d. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

## *3.11. Wage Labour*

### 3.11.1. RECEIPTS FROM WAGE LABOUR

**Findings**

The findings in the above regard are available at Table-3.26.1 (A) for MGNREGS and Table-3.26.2 (B) for earnings from Other Sources (like agriculture, domestic help, construction, etc), with these tables being furnished at the next few pages. The tables give the following findings regarding the performance of wage labour by household members of the sampled households:

- Days worked per year;
- Rate per day (in Rs.); and
- Amount Received per annum (in Rs.).

**Analysis**

*(A) Receipts from Wage Labour - MGNREGS*

In both project and control village, it is found that the number of 'days worked per year' by the household as part of MGNREGS varies for each districts respectively. The districts in East Jaintia Hills, North Garo Hills and South West Khasi Hills for both project and control villages receives an amount of Rs. 163 per individual per day. The average amount received in project village is Rs. 9406.179 (approx. about Rs. 9407) for 112 household whereas in control village is Rs. 10631.2 (approx. about Rs. 10631) for 112 households.

*(B) Receipts from Wage Labour – Other sources*

Other source includes wage labour in agriculture, domestic, construction, etc. It is also found that in both project and control village, the number of 'days worked per year' by the household varies for each district respectively. The 'rate per day' also varies for each district depending on the type and location of work.

Project village: The highest average rate per day in project village is 241.667 (approx Rs. 242) and the lowest average rate per day is Rs. 133.333 (approx Rs. 134). The average amount received in project village is Rs. 42416.800 (approx. about Rs. 42417) for 50 household in project village

Control village: The highest average rate per day in control village is Rs. 278.947 (approx Rs. 179) and the lowest average rate per day is Rs.150. The average amount received in control village is Rs. 4728.117 (approx. about Rs. 4729) for 51 households.

## Table-3.26.1 Receipts from Wage Labour –A [BATCH-V]

| District | Village | Location | Households | Source | Days Worked per Year | | | Main Months of the Year | Rate Per Day (Rs.) | | | Amount Received (Rs.) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | n | $\bar{x}$ | SD | | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | MGNREGS | 20 | 40 | 0 | Sept-Oct | 20 | 163 | 0 | 20 | 6520 | 0 |
| | Ngaibang | MR | 4 | MGNREGS | 4 | 40 | 0 | April-May | 4 | 163 | 0 | 4 | 6520.00 | 0 |
| | Lura | LR | 16 | MGNREGS | 16 | 40 | 0 | Nov-Dec | 16 | 163 | 0 | 16 | 6520.00 | 0 |
| North Garo Hills | Merongdik | UR | 9 | MGNREGS | 9 | 100 | 0 | -- | 9 | 163 | 0 | 9 | 15300 | 0 |
| | Samkalak Songma | MR | 12 | MGNREGS | 12 | 86.667 | 19.695 | -- | 12 | 163 | 5.029 | 12 | 13601.667 | 2840.608 |
| | Garo Thorikakona | LR | 20 | MGNREGS | 20 | 71 | 17.442 | -- | 20 | 163 | 4.894 | 20 | 11353.00 | 2961.110 |
| South West Khasi Hills | Wahkaji | UR | 21 | MGNREGS | 21 | 12 | 5.020 | Sept-Oct | 21 | 163 | 0 | 21 | 2282.00 | 0 |
| | Mawthabah | MR | 5 | MGNREGS | 5 | 70 | 0 | August-Oct | 5 | 163 | 291.583 | 5 | 25102.00 | 12499.029 |
| | Langpa | LR | 5 | MGNREGS | 5 | 70 | 0 | March-April | 5 | 163 | 0 | 5 | 18256.00 | 1025.414 |
| **TOTAL/AVERAGE** | **(PROJECT)** | **--** | **112** | **--** | **112** | **52.786** | **--** | **--** | **112** | **163.00** | **--** | | **9406.179** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | MGNREGS | 20 | 51 | 21.981 | August-Sept | 17 | 163 | 0 | 17 | 9780.00 | 0 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | MGNREGS | 21 | 80.952 | 20.471 | -- | 21 | 163 | 0 | 21 | 13195.238 | 3336.716 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | MGNREGS | 12 | 30 | 0 | -- | 12 | 163 | 0 | 12 | 7350.00 | 2610.643 |
| **TOTAL/AVERAGE** | **(CONTROL)** | **--** | **56** | **--** | **53** | **58.113** | | **--** | **50** | **163.00** | **--** | **50** | **10631.2** | **--** |

**Notes:** UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under Days Worked / Rate Per Day / Amount Received:**
n gives the number of responses to the query
$\bar{x}$ gives the arithmetical mean of responses (i.e. the average of days worked / rate per day / amount received)
s. d. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

## Table-3.26.2 Receipts from Wage Labour – B [BATCH-V]

| District | Village | Location | Households | Source | Days Worked per Year | | | Main Months of the Year | Rate Per Day (Rs.) | | | Amount Received (Rs.) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | n | $\bar{x}$ | SD | | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | Private Labour | 6 | 153.333 | 31.411 | -- | 6 | 200 | 0 | 6 | 31333.333 | 6282.2501 |
| | Ngaibang | MR | 4 | Private Labour | 3 | 200 | 100 | -- | 3 | 200 | 0 | 3 | 60000.00 | 52915.026 |
| | Lura | LR | 16 | Private Labour | 14 | 191.429 | 41.782 | -- | 14 | 200 | 0 | 14 | 40428.571 | 10051.516 |
| North Garo Hills | Merongdik | UR | 9 | | | | | -- | | | | | | |
| | Samkalak Songma | MR | 12 | Private Labour | 3 | 216.667 | 28.868 | -- | 3 | 133.333 | 28.868 | 3 | 29166.667 | 8779.712 |
| | Garo Thorikakona | LR | 20 | Private Labour | 9 | 214.819 | 23.294 | -- | 9 | 204.545 | 16.667 | 9 | 45260.00 | 4874.423 |
| | | | | Private Labour | 2 | 242.5 | 10.607 | -- | 2 | 200 | 0 | 2 | 48500.00 | 212.320 |
| South West Khasi Hills | Wahkaji | UR | 21 | Private Labour | 12 | 175 | 45.227 | -- | 12 | 241.667 | 70.173 | 12 | 48333.333 | 16984.156 |
| | | | | Private Labour | 1 | 100 | 0 | -- | 1 | 150 | 0 | 1 | 15000.00 | 0 |
| | Mawthabah | MR | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Langpa | LR | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **--** | **50** | **189.368** | **--** | **--** | **50** | **205.818** | **--** | **50** | **42416.800** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | Private Labour | 19 | 238.947 | 37.702 | -- | 19 | 278.947 | 25.363 | 19 | 80710.525 | 31267.358 |
| | | | | Private Labour | 5 | 120 | 27.386 | -- | 5 | 150 | 0 | 5 | 18000.00 | 4107.919 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | Private Labour | 12 | 240 | 35.097 | -- | 12 | 212.5 | 22.613 | 12 | 58898.833 | 19267.889 |
| | | | | | | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | Private Labour | 15 | 196.667 | 63.994 | -- | 15 | 261.763 | 43.763 | 15 | 5400.00 | 22282.445 |
| | | | | -- | | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **TOTAL/AVERAGE** | | **(CONTROL)** | **56** | **--** | **51** | **215.098** | **--** | **--** | **51** | **245.61643** | **--** | **51** | **47280.117** | **--** |

Notes: UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

Under Days Worked / Rate Per Day / Amount Received:
n gives the number of responses to the query
$\bar{x}$ gives the arithmetical mean of responses (i.e. the average of days worked / rate per day / amount received)
s. d. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

## *3.12. Migration*

3.12.1. QUESTIONS 1-7 (PART-1)

**Findings**

Table-3.27.1 A gives the findings of the following Migration parameters:

- Nos. Migrated from Village
- Nos. Permanently Migrated
- Reasons of migration
- Destinations
- Migration Nature (Permanent and Seasonal)
- If Migration Nature is Seasonal, then Months of Stay

**Analysis**

*Nos. Migrated from Village*

From the survey carried out, it is found that the total migrated from village for male is 58 and for female is 53 for project village, where as in the control village, it is 15 for male and 9 for female.

*Nos. Permanently Migrated*

There are no permanently migrated people from the project village and only one permanently migrated from the control village.

*Destinations*

Some of the destinations that people go and migrate for both Project and Control village are as follows:

| | |
|---|---|
| East Jaintia Hills | Jowai, Shillong, Khliehriat |
| North Garo Hills | Jorhat, Shillong, Tura, Krishnai, Williamnagar Bajengdoba |
| South West Khasi Hills | Shillong, Mawkyrwat, Wahkaji, Nongstoin, Phlang Kynshi |

*Migration Nature (Permanent and Seasonal)*

The total number of people permanently migrated is 0 from project village and 1 from control village. The total number of seasonally migrated people from the project village is 45 where as in the control village, the total number of people seasonally migrated is 15.

*Months of Stay if seasonally migrated*

The average months of stay by the people in the project village is 9.629 (approx 10 months in a year), where as in the control village the average months stay by the people is 7.125 (approx 7 months in a year).

## Table-3.27.1 (A) Questions 1-7) (Part-1) [BATCH-V]

| District | Village | Location | Households | Any Member Migrated | | If Yes to "Any Member Migrated' | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Nos. Migrated from Village | | Nos. Permanently Migrated | | Reasons | | | Destinations | Migration Nature | | If Seasonal, Months of Stay | |
| | | | | Yes | No | Male | Female | Male | Female | Work | Study | Other | | Permanent | Seasonal | n | $\bar{x}$ |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | Yes | -- | 11 | 11 | 0 | 0 | | 9 | -- | Jowai, Shillong, Khliehriat | -- | 9 | 9 | 11.00 |
| | Ngaibang | MR | 4 | Yes | -- | 3 | 1 | 0 | 0 | 1 | 1 | -- | Jowai | -- | 2 | 2 | 10.50 |
| | Lura | LR | 16 | Yes | -- | 2 | 1 | 0 | 0 | 1 | | -- | Shillong | -- | 1 | 1 | 11.00 |
| North Garo Hills | Merongdik | UR | 9 | Yes | -- | 5 | 1 | 0 | 0 | | 2 | -- | Williamnagar | -- | 2 | 2 | 10.5 |
| | Samkalak Songma | MR | 12 | Yes | -- | 3 | 3 | 0 | 0 | | 2 | -- | Bajengdoba, Tura | -- | 2 | 2 | 10.5 |
| | Garo Thorikakona | LR | 20 | Yes | -- | 8 | 4 | 0 | 0 | 1 | 6 | -- | Jorhat, Shillong, Tura, Krishnai | -- | 7 | 7 | 5.192 |
| South West Khasi Hills | Wahkaji | UR | 21 | Yes | -- | 12 | 18 | 0 | 0 | | 15 | -- | Shillong, Mawkyrwat, Nongstoin | -- | 15 | 15 | 10.20 |
| | Mawthabah | MR | 5 | Yes | -- | 1 | 3 | 0 | 0 | | 3 | -- | Wahkaji, Nongstoin, Phlang Kynshi | -- | 3 | 3 | 10.00 |
| | Langpa | LR | 5 | Yes | -- | 13 | 11 | 0 | 0 | | 4 | -- | Nongstoin, Shillong | -- | 4 | 4 | 10.25 |
| **TOTAL / AVERAGE** | | **PROJECT** | **112** | **--** | **--** | **58** | **53** | **0** | **0** | **3** | **42** | **--** | **--** | **--** | **45** | **45** | **9.629** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | Yes | -- | 0 | 3 | 0 | 0 | | 2 | -- | Jowai, Shillong | -- | 2 | 2 | 11.00 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | Yes | -- | 13 | 5 | 1 | 0 | 6 | 4 | -- | Shillong,Kashmir,Williamnagar,Kerela, Tezpur,Sikkim,Jharkhand | 1 | 10 | 10 | 5.388 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | Yes | -- | 2 | 1 | 0 | 0 | | 3 | -- | Nongstoin | -- | 3 | 3 | 10.333 |
| **TOTAL / AVERAGE** | | **CONTROL** | **56** | **--** | **--** | **15** | **9** | **1** | **0** | **6** | **9** | **--** | **--** | **1** | **15** | **15** | **7.125** |

**Notes**: UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under 'Months of Stay':**
**n** gives the number of responses to the query
$\bar{x}$ gives the arithmetical mean of responses (i.e. the average of the months of stay)

3.12.2. QUESTIONS 8-11 (PART-2)

**Findings**

Table-3.27.2-B gives the findings of the following Migration parameters, which had been covered by Question Nos. 8-11 of the Schedule:

- Average amount received from migrated members
- Members planning to migrate
- Reasons people planning for migration

**Analysis**

*Average amount received from migrated members*

**Project Village**-The average amount received per year from migrated members in the project village is approximately Rs. **65,000** per year.

**Control Village-** The average amount received per year from migrated members in the control village is approximately Rs. **28,800** per year.

*Members planning to migrate*

As seen the table, a total of 23 households from the project village in which some members of the family are planning to migrate and a total of 5 households from the control village in which some members of the family are planning to migrate.

*Reasons people planning for migration*

As seen in the table below, the main reason why people seasonally migrate to other places is education in the project villages. Parents tend to send their children to district heads or nearby places which have good educational institutions.

Unemployment is also a factor why people migrate to other places due to seeking better job opportunities.

## Table-3.27.2 (B) Questions 8-11 (Part-2) [BATCH-V]

| District | Village | Location | Households | If Yes to "Any Member Migrated' | | | | | Members Planning to Migrate | | If Yes to 'Any Member Planning to Migrate' | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Any Payment | | If Yes, Amount Received | | | | | Total Nos. Intending in Village | Nos. of Households in Village giving following reasons | | | | |
| | | | | Yes | No | n | $\bar{x}$ | SD | Yes | No | | Un-employment | Food Shortage | Water Scarcity | Security | Education |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | -- | No | -- | -- | -- | -- | 20 | -- | -- | -- | -- | -- | -- |
| | Ngaibang | MR | 4 | Yes | | 1 | 75000.00 | 0.0 | 1 | -- | -- | 1 | -- | -- | -- | -- |
| | Lura | LR | 16 | Yes | | 1 | 24000.00 | 0.0 | | 16 | -- | -- | -- | -- | -- | -- |
| North Garo Hills | Merongdik | UR | 9 | -- | No | -- | -- | -- | 2 | -- | -- | -- | -- | -- | -- | 2 |
| | Samkalak Songma | MR | 12 | -- | No | -- | -- | -- | 2 | -- | -- | -- | -- | -- | -- | 2 |
| | Garo Thorikakona | LR | 20 | Yes | -- | 1 | 96000.00 | 0.0 | 2 | -- | -- | -- | -- | -- | -- | 2 |
| South West Khasi Hills | Wahkaji | UR | 21 | -- | No | -- | -- | -- | 10 | -- | -- | 10 | -- | -- | -- | 10 |
| | Mawthabah | MR | 5 | -- | No | -- | -- | -- | 2 | -- | -- | 2 | -- | -- | -- | 2 |
| | Langpa | LR | 5 | -- | No | -- | -- | -- | 4 | -- | -- | 4 | -- | -- | -- | 4 |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **122** | **--** | **--** | **3** | **65000** | **--** | **23** | **--** | **--** | -- | **--** | -- | -- | -- |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | -- | No | -- | -- | -- | 1 | -- | -- | 1 | -- | -- | -- | 1 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | Yes | -- | 5 | 28800.00 | 23941.600 | 1 | -- | -- | -- | -- | -- | -- | 1 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | -- | No | -- | -- | -- | 3 | -- | -- | 3 | -- | -- | -- | 3 |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **--** | **--** | **5** | **28800** | **--** | **5** | **--** | **--** | **--** | **--** | **--** | **--** | **--** |

**Notes**: UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under 'Months of Stay':**
**n** gives the number of responses to the query
$\bar{x}$ gives the arithmetical mean of responses (i.e. the average of the months of stay)

## *3.13. Income [Batch V]*

### INCOME - SOURCES & QUANTUM

**Findings**

This sub-section gives discusses the income – sources and quantum of the sampled households. They are based on different sources of income generating activities. In project as well as control village, it is seen that many households are engaged in different income generating activities which are their main source of livelihood. Out of the total household for both project and control village, it is found that not all households are engaged in one activity but in many income generating activities.

Table 3.28 below reports the number of households and their average income received per year in both project and control villages.

**Table-3.28: Summary of Incomes (Project & Control Villages)**

| Source | Project Village | | Control Village | |
|---|---|---|---|---|
| | No. of Households | Average Quantum (Rs.) | No. of Households | Average Quantum (Rs.) |
| **Agriculture Crops** | 27 | 16,926 | 2 | 59,200 |
| **Orchard/ Plantation Crops** | 28 | 48,614 | 7 | 48,971 |
| **Livestock** | 73 | 65,491 | 24 | 22,158 |
| **Fishery** | 4 | 21,563 | 3 | 8,625 |
| **NTFP** | 36 | 53,289 | 9 | 17,222 |
| **Wage Labour** | 109 | 9,548 | 49 | 11,513 |
| **Remittance** | 2 | 49,500 | 4 | 31,000 |
| **All Others** | 82 | 93,434 | 49 | 81,372 |

[**Note**: All figures have been rounded off.]

**Analysis**

In project village, out of the total number of households, it is seen that many households are mostly engaged in 'wage labour' with an average quantum per year of about 9,547.561 and 'remittance' as the least engaged activity with 49,500.00. In control village, 'all others' activity is the most engaged activity with average quantum of 93,434.148 while 'agricultural crops' is the least with 59,200.00. (All figures are in Rupees.)

In terms of total average of income received (quantum), it is found that in both project and control village, many households are engaged in 'all others' with an average quantum per year of about 93,434.148 and 81,372.451 respectively. The least average of income received in project village is 'wage labour' activity with an average quantum per year of about 9547.561 and in control village is 'fishery' with 8625.00.

## Table-3.29.1: INCOME - SOURCES & QUANTUM – Part 1 [BATCH V]

| District | Village | Location | Households | Source: Agricultural Crops | | | | | Source: Orchard / Plantation Crops | | | | | Source: Livestock | | | | | Source: Fishery | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Income Received | | Quantum | | | Income Received | | Quantum | | | Income Received | | Quantum | | | Income Received | | Quantum | | |
| | | | | Yes | No | n | $\bar{x}$ | SD | Yes | No | n | $\bar{x}$ | SD | Yes | No | n | $\bar{x}$ | SD | Yes | No | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | Y | -- | 5 | 12162.500 | 11620.196 | Y | | 1 | 60000.00 | 0.0 | Y | -- | 14 | 105971.400 | 125791.800 | Y | | 4 | 21562.500 | 17893.638 |
| | Ngaibang | MR | 4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | Y | -- | 4 | 107750.00 | 102665.700 | -- | -- | -- | -- | -- |
| | Lura | LR | 16 | Y | -- | 2 | 3800.00 | 282.843 | | | | | | Y | -- | 15 | 43723.333 | 33251.83 | -- | -- | -- | -- | -- |
| North Garo Hills | Merongdik | UR | 9 | | -- | | | | Y | | 8 | 129625.00 | 126412.00 | Y | -- | 2 | 7500.00 | 3535.534 | -- | -- | -- | -- | -- |
| | Samkalak Songma | MR | 12 | Y | -- | 4 | 9675.00 | 6857.300 | Y | | 8 | 14375.00 | 7976.530 | Y | -- | 7 | 8557.140 | 6102.420 | -- | -- | -- | -- | -- |
| | Garo Thorikakona | LR | 20 | -- | -- | | | | Y | | 8 | 17662.500 | 14914.900 | Y | -- | 5 | 11800.00 | 5495.450 | -- | -- | -- | -- | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | Y | -- | 10 | 7530.00 | 5868.712 | Y | | 2 | 950.00 | 353.553 | Y | -- | 16 | 102093.800 | 132803.300 | -- | -- | -- | -- | -- |
| | Mawthabah | MR | 5 | Y | -- | 2 | 10800.00 | 3959.798 | Y | | 1 | 6000.00 | 0.0 | Y | -- | 5 | 70900.00 | 114583.200 | -- | -- | -- | -- | -- |
| | Langpa | LR | 5 | Y | -- | 4 | 63250.00 | 62967.580 | -- | -- | | -- | -- | Y | -- | 5 | 17700.00 | 11289.380 | -- | -- | -- | -- | -- |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **--** | **--** | **27** | **16926.389** | **--** | **--** | **--** | **28** | **48614.286** | **--** | **--** | **--** | **73** | **65491.10** | **--** | **--** | **--** | **4** | **21562.500** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | Y | | 7 | 17257.143 | 16899.100 | -- | -- | -- | -- | -- |
| North Garo Hills | Rabha Thorikakona | CV | 21 | Y | -- | 2 | 59200.00 | 29415.600 | Y | | 7 | 48971.400 | 48818.700 | Y | | 10 | 17450.00 | 10494.600 | Y | | 3 | 8625.00 | 3712.311 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | Y | | 7 | 33785.710 | 32175.120 | -- | -- | -- | -- | -- |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **--** | **--** | **2** | **59200.00** | **--** | **--** | **--** | **7** | **48971.400** | **--** | **--** | **--** | **24** | **22158.33** | **--** | **--** | **--** | **3** | **8625.00** | **--** |

**Notes:**

UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under Quantum (of Income):** n gives the number of responses to the query

$\bar{x}$ gives the arithmetical mean of responses (i.e. the average of the incomes received)

s. d. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

## Table-3.29.2: INCOME - SOURCES & QUANTUM Part 2 [BATCH - V]

| District | Village | Location | Households | Source: NTFP | | | | | Source: Wage Labour | | | | | Source: Remittance | | | | | Source: ALL Others | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Income Received | | Quantum | | | Income Received | | Quantum | | | Income Received | | Quantum | | | Income Received | | Quantum | | |
| | | | | Yes | No | n | $\bar{x}$ | SD | Yes | No | n | $\bar{x}$ | SD | Yes | No | n | $\bar{x}$ | SD | Yes | No | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | Y | | 4 | 11500.00 | 5916.080 | Y | -- | 18 | 6520.00 | 0.0 | | | | | | Y | | 17 | 128705.90 | 93335.260 |
| | Ngaibang | MR | 4 | | | | | | Y | -- | 4 | 6015.00 | 1010.00 | Y | | 1 | 75000.0 | 0.0 | Y | | 3 | 92000.00 | 45077.710 |
| | Lura | LR | 16 | Y | | 3 | 16000.00 | 9165.151 | Y | -- | 16 | 6520.00 | 0.0 | Y | | 1 | 24000.0 | 0.0 | Y | | 15 | 51600.00 | 35134.030 |
| North Garo Hills | Merongdik | UR | 9 | Y | | 1 | 3000.00 | 0.0 | Y | -- | 9 | 15300.00 | 0.0 | -- | -- | - | -- | -- | Y | | 2 | 97250.00 | 21566.757 |
| | Samkalak Songma | MR | 12 | -- | -- | -- | -- | -- | Y | -- | 12 | 13935.00 | 3089.75 | -- | -- | - | -- | -- | Y | | 6 | 36583.300 | 13177.300 |
| | Garo Thorikakona | LR | 20 | -- | -- | -- | -- | -- | Y | -- | 20 | 10997.00 | 2755.95 | -- | -- | - | -- | -- | Y | | 16 | 67350.00 | 31579.300 |
| South West Khasi Hills | Wahkaji | UR | 21 | Y | - | 19 | 56468.75 | 34535.230 | Y | -- | 20 | 2664.706 | 896.718 | -- | -- | - | -- | -- | Y | | 18 | 123666.67 | 132780.50 |
| | Mawthabah | MR | 5 | Y | - | 5 | 39200.00 | 27835.680 | Y | -- | 5 | 25102.00 | 12499.03 | -- | -- | - | -- | -- | Y | | 3 | 164000.00 | 86810.140 |
| | Langpa | LR | 5 | Y | - | 4 | 138125.0 | 126416.20 | Y | -- | 5 | 18256.00 | 10205.41 | -- | -- | - | -- | -- | Y | | 2 | 107000.00 | 52325.900 |
| **TOTAL / AVERAGE** | | (PROJECT) | **112** | -- | - | **36** | **53289.06** | -- | -- | -- | **109** | **9547.561** | | | | **2** | **49500.00** | | | | **82** | **93434.148** | -- |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | -- | - | -- | -- | -- | Y | -- | 18 | 12496.67 | 7353.62 | -- | -- | -- | -- | -- | Y | -- | 20 | 82375.00 | 32071.410 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | -- | - | -- | -- | -- | Y | -- | 19 | 13211.60 | 3344.69 | Y | -- | 4 | 31000.0 | 27055.42 | Y | -- | 13 | 86057.700 | 101759.00 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | Y | - | 9 | 17222.22 | 7124.391 | Y | -- | 12 | 7350.00 | 2610.643 | -- | -- | -- | -- | -- | Y | -- | 16 | 76312.500 | 42452.670 |
| **TOTAL / AVERAGE** | | (CONTROL) | **56** | -- | - | **9** | **17222.22** | -- | -- | -- | **49** | **11513.479** | -- | -- | -- | **4** | **31000.00** | -- | | -- | **49** | **81372.451** | -- |

**Notes:**

UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under Quantum (of Income):** n gives the number of responses to the query

$\bar{x}$ gives the arithmetical mean of responses (i.e. the average of the incomes received)

s. d. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

## 3.14. Assets [Batch V]

**Findings**

This sub-section gives discusses the assets possess by the households in both project and control villages. The assets include house, radio, television, mobile connection, bicycle, two-wheeler, other vehicle. Tables-3.30.1 and 3.30.2 give the various important assets possessed by households in both project as well as control villages. The above tables are furnished in the following pages.

**Analysis**

*House*

It is found that in both project and control village, many household are having semi-pucca type of house with sanitary toilets and having electrical connection.

| Project Village | |
|---|---|
| Semi-pucca house | 42% |
| Sanitary toilet | 87% |
| Electrical connection | 89% |
| Availability of solar devices | 3% |

| Control Village | |
|---|---|
| Semi-pucca house | 68% |
| Sanitary toilet | 70% |
| Electrical connection | 75% |
| Availability of solar devices | 0% |

*Radio*

In project village, only 24% owned a 'radio' as part of their assets while the remaining 76% do not - whereas, in control village, only 4% owned while the remaining do 96% do not.

*Television*

In project village, only 44% owned a 'television' as part of their assets while the remaining 56% do not whereas, in control village, only 21% owned while the remaining do 79% do not.

*Mobile Connection*

In project village, 77% of the household have 'mobile connection' as part of their assets while the remaining 23% do not whereas, in control village, 80% have while the remaining do 20% do not. In project village, the average number of connections is 2.423 (approx. about 2 connections) whereas in control village is 1.934 (approx. about 2 connections).

*Bicycle*

In project village, only 14% owned a 'bicycle' as part of their assets while the remaining 86% do not whereas in control village, 21% have while the remaining 79% do not.

*Two Wheeler*

In project village, only 11% owned 'two-wheeler' as part of their assets while the remaining 89% do not whereas in control village, 4% have while the remaining 96% do not.

*Other Vehicle*

In project village, only 12% owned 'other vehicle' as part of their assets while the remaining 88% do not. There are no households who own 'other vehicles' in control village.

## Table-3.30.1: POSSESSION OF ASSETS BY TYPE – PART 1 [BATCH V]

| District | Village | Location | Households | House | | If House = Yes | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Yes | No | Type of House | | | Sanitary Toilet | | Electrical Connection | | Availability of Solar Devices | |
| | | | | | | Kutcha | Semi Pucca | Pucca | Yes | No | Yes | No | Yes | No |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | 20 | 0 | 3 | 10 | 7 | 20 | 0 | 20 | 0 | 0 | 20 |
| | Ngaibang | MR | 4 | 4 | 0 | 2 | 1 | 1 | 4 | 0 | 4 | 0 | 0 | 4 |
| | Lura | LR | 16 | 16 | 0 | 0 | 16 | 0 | 16 | 0 | 16 | 0 | 0 | 16 |
| North Garo Hills | Merongdik | UR | 9 | 9 | 0 | 9 | 0 | 0 | 9 | 0 | 9 | 0 | 2 | 7 |
| | Samkalak Songma | MR | 12 | 12 | 0 | 11 | 1 | 0 | 7 | 5 | 6 | 6 | 1 | 11 |
| | Garo Thorikakona | LR | 20 | 20 | 0 | 17 | 3 | 0 | 17 | 3 | 19 | 1 | 0 | 20 |
| South West Khasi Hills | Wahkaji | UR | 21 | 21 | 0 | 0 | 10 | 11 | 18 | 3 | 18 | 3 | 0 | 21 |
| | Mawthabah | MR | 5 | 5 | 0 | 3 | 2 | 0 | 4 | 1 | 4 | 1 | 0 | 5 |
| | Langpa | LR | 5 | 5 | 0 | 1 | 4 | 0 | 2 | 3 | 4 | 1 | 0 | 5 |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **112** | **0** | **46** | **47** | **19** | **97** | **15** | **100** | **12** | **3** | **109** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | 20 | 0 | 1 | 19 | 0 | 20 | 0 | 13 | 7 | 0 | 20 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | 21 | 0 | 13 | 5 | 3 | 19 | 2 | 21 | 0 | 0 | 21 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | 15 | 0 | 0 | 14 | 1 | 0 | 15 | 8 | 7 | 0 | 15 |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **56** | **0** | **14** | **38** | **4** | **39** | **17** | **42** | **14** | **0** | **56** |

**Note:**

UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

## Table-3.31.2: POSSESSION OF ASSETS BY TYPE - PART 2 [BATCH V]

| District | Village | Location | Households | Radio | | Television | | Mobile Connection | | | | | Bicycle | | Two Wheeler | | Other Vehicle | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | If Yes, No. Of Connections | | | | | | | | |
| | | | | Yes | No | Yes | No | Yes | No | n | $\bar{x}$ | SD | Yes | No | Yes | No | Yes | No |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | 11 | 9 | 15 | 5 | 18 | 2 | 18 | 2.667 | 1.237 | 0 | 20 | 2 | 18 | 1 | 19 |
| | Ngaibang | MR | 4 | 0 | 4 | 0 | 4 | 4 | 0 | 4 | 1.5 | 0.577 | 0 | 4 | 0 | 4 | 0 | 4 |
| | Lura | LR | 16 | 1 | 15 | 0 | 16 | 14 | 2 | 14 | 1.857 | 1.099 | 0 | 16 | 2 | 14 | 1 | 15 |
| North Garo Hills | Merongdik | UR | 9 | 3 | 6 | 3 | 6 | 7 | 2 | 7 | 1.286 | 0.488 | 2 | 7 | 1 | 8 | 1 | 8 |
| | Samkalak Songma | MR | 12 | 0 | 12 | 2 | 10 | 4 | 8 | 4 | 1.333 | 0.516 | 5 | 7 | 3 | 9 | 0 | 12 |
| | Garo Thorikakona | LR | 20 | 3 | 17 | 11 | 9 | 14 | 6 | 14 | 2.286 | 1.267 | 6 | 14 | 2 | 18 | 1 | 19 |
| South West Khasi Hills | Wahkaji | UR | 21 | 7 | 14 | 16 | 5 | 21 | 0 | 21 | 3.476 | 1.569 | 3 | 18 | 2 | 19 | 7 | 14 |
| | Mawthabah | MR | 5 | 1 | 4 | 0 | 5 | 1 | 4 | 1 | 2 | 0 | 0 | 5 | 0 | 5 | 1 | 4 |
| | Langpa | LR | 5 | 1 | 4 | 2 | 3 | 3 | 2 | 3 | 2.333 | 1.155 | 0 | 5 | 0 | 5 | 1 | 4 |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **27** | **85** | **49** | **63** | **86** | **26** | **86** | **2.423** | | **16** | **96** | **12** | **100** | **13** | **99** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | 0 | 20 | 5 | 15 | 17 | 3 | 17 | 1.706 | 0.920 | 0 | 20 | 0 | 20 | 0 | 20 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | 1 | 20 | 7 | 14 | 19 | 2 | 19 | 2.316 | 1.529 | 12 | 9 | 2 | 19 | 0 | 21 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | 1 | 14 | 0 | 15 | 9 | 6 | 9 | 1.556 | .0882 | 0 | 15 | 0 | 15 | 0 | 15 |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **2** | **54** | **12** | **44** | **45** | **11** | **45** | **1.934** | | **12** | **44** | **2** | **54** | **0** | **56** |

**Note:**
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village
**Under Mobile Connection:**
**n** gives the number of responses to the query
$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the Nos. of Connections)
**s. d**. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses

### *3.15. Government Entitlements [Batch V]*

**Findings**

As per the survey, entitlements received by the households in both project & control villages are given by the Government such as NREGS job card, ration card, BPL card, and other Government facilities. It is found that some households do not avail all these entitlements. Table-3.32.1 and Table-3.32.2 (given in the next two pages) indicate the findings of the following entitlements:

- NREGS Job Card;
- Ration Card;
- BPL Card; and
- Any Other Government Facility.

**Analysis**

NREGS Job Card: In project village, it is found that out of the 112 total households, only 110 household availed of NREGS job card. The average total number of days worked by 110 households is 49.055 days (approx. 49 days) and the average total number of days paid for is 49.055 days (approx. 49 days). In control village, only 50 out of 56 household avail NREGS job card with average total number of days worked is 62.800 days (approx. 63 days) and the total number of days paid for by 50 households is 62.800 days (approx. 63 days).

Ration Card: In both project and control villages, essential commodities given are rice, kerosene and sugar. Out of 112 total households, only 90 households avail Ration card in project village and only 30 out of 56 households in control village.

BPL Card: Out of 112 total households in the project village, 66 households are found to have BPL cards whereas in control village, only 27 out of 56 households have BPL cards. These cards are made available to households who are determined to be living 'Below the Poverty Line' (BPL).

Any other Government Facility: It is found that Meghalaya Health Insurance Scheme (MHIS) is the only government facility currently available. In project village, only 63 out of 112 households avail MHIS and in control village, only 28 out of 56 households.

## Table-3.32.1: GOVERNMENT ENTITLEMENTS PART 1 – NREGS [BATCH V]

| District | Village | Location | Households | NREGS Job Card | | If NREGS Job Card = YES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Yes | No | No. of Days Worked | | | No. of Days Paid For | | |
| | | | | | | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | 20 | -- | 20 | 40.00 | 0.0 | 20 | 40.00 | 0.0 |
| | Ngaibang | MR | 4 | 4 | -- | 4 | 40.00 | 0.0 | 4 | 40.00 | 0.0 |
| | Lura | LR | 16 | 16 | -- | 16 | 40.00 | 0.0 | 16 | 40.00 | 0.0 |
| North Garo Hills | Merongdik | UR | 9 | 9 | -- | 9 | 100.00 | 0.0 | 9 | 100.00 | 0.0 |
| | Samkalak Songma | MR | 12 | 12 | -- | 12 | 86.667 | 19.694 | 12 | 86.667 | 19.694 |
| | Garo Thorikakona | LR | 20 | 20 | -- | 20 | 71.00 | 17.442 | 20 | 71.00 | 17.442 |
| South West Khasi Hills | Wahkaji | UR | 21 | 19 | 2 | 19 | 14.00 | 0.0 | 19 | 14.00 | 0.0 |
| | Mawthabah | MR | 5 | 5 | | 5 | 17.00 | 0.0 | 5 | 17.00 | 0.0 |
| | Langpa | LR | 5 | 5 | | 5 | 17.00 | 0.0 | 5 | 17.00 | 0.0 |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **110** | **2** | **110** | **49.055** | **--** | **110** | **49.055** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | 19 | 1 | 19 | 60.00 | 0.0 | 19 | 60.00 | 0.0 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | 21 | -- | 21 | 80.952 | 20.471 | 21 | 80.952 | 20.471 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | 10 | 5 | 10 | 30.00 | 0.0 | 10 | 30.00 | 0.0 |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **50** | **6** | **50** | **62.800** | **--** | **50** | **62.800** | **--** |

**Notes:**
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under Nos. of Days Worked / No. of Days Paid For:**
n gives the number of responses to the query
$\bar{x}$ gives the arithmetical mean of the responses (i.e. the average of the Nos. of Days Worked / No. of Days Paid For)
s. d. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

## Table-3.32.2: GOVERNMENT ENTITLEMENTS PART TWO - OTHER ENTITLEMENTS [BATCH V]

| District | Village | Location | Households | Ration Card | | | BPL Card | | Any Other Govt. Facility | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Yes | No | If Yes Items Cited as Being Purchased | Yes | No | Yes | No | If Yes, Details Cited |
| **PROJECT VILLAGE** | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | 20 | -- | Rice, Sugar, Kerosene | 20 | -- | 20 | -- | MHIS |
| | Ngaibang | MR | 4 | 4 | -- | Rice, Sugar, Kerosene | 4 | -- | 1 | 3 | MHIS |
| | Lura | LR | 16 | 16 | -- | Rice, Sugar, Kerosene | 16 | -- | -- | 16 | -- |
| North Garo Hills | Merongdik | UR | 9 | 5 | 4 | Rice, Sugar, Kerosene | 4 | 5 | 4 | 5 | MHIS |
| | Samkalak Songma | MR | 12 | 1 | 11 | Rice, Sugar, Kerosene | 3 | 9 | 4 | 8 | MHIS |
| | Garo Thorikakona | LR | 20 | 20 | | Rice, Sugar, Kerosene | 19 | 1 | 17 | 3 | MHIS |
| South West Khasi Hills | Wahkaji | UR | 21 | 20 | 1 | Rice, Sugar, Kerosene | -- | 21 | 17 | 4 | MHIS |
| | Mawthabah | MR | 5 | | 5 | | -- | 5 | -- | 5 | -- |
| | Langpa | LR | 5 | 4 | 1 | Rice, Sugar, Kerosene | -- | 5 | -- | 5 | -- |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **90** | **22** | **--** | **66** | **46** | **63** | **49** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | 14 | 6 | Rice, Sugar, Kerosene | 14 | 6 | 11 | 9 | MHIS |
| North Garo Hills | Rabha Thorikakona | CV | 21 | 16 | 5 | Rice, Sugar, Kerosene | 13 | 8 | 15 | 6 | MHIS |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | | 15 | -- | -- | 15 | 2 | 13 | MHIS |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **30** | **26** | **--** | **27** | **29** | **28** | **28** | **--** |

**Notes**:
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

## *3.16. Saving & Credit [Batch V]*

**Findings**

As per the survey, in both the project and control villages, only some households are utilizing the saving and credit facilities offered by certain banks such as State Bank of India (SBI), Punjab National Bank (PNB), Meghalaya Cooperative Apex Bank (MCAB), etc. This is because many of the sampled households are unwilling to divulge their financial status.

Table-3.33 (given at overleaf) indicates the savings and credit utilization in the sampled households of the project villages and control villages.

**Analysis**

*Saving*

It is found that most of the households avail of the saving facilities offered by banks such as SBI, PNB and MCAB as well as savings at home and also SHG.

In both project and control village, it is found that the households are unwilling to divulge their financial status. As per survey, none of the households are giving their income statement but are mentioning only the name of the banks they are availing, except in Bamkhongsi village in East Jaintia Hills (Control Village) where only 1 out of total 56 households has given their average amount saved annually of about Rs. 120,000.

*Credit*

As per survey, it is found that none of the households in both project and control villages availed of credit facility.

## Table-3.33: Saving & Credit [BATCH V]

| District | Village | Location | Households | SAVING | | | | | | | CREDIT | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Amount Saved | | | Where Saved | | | | Amount Borrowed | | | Range of Interest Rates (%) | | Where Taken | | | |
| | | | | n | $\bar{x}$ | SD | Bank | Post Office | SHG | Other | n | $\bar{x}$ | SD | From | To | Bank | Micro Finance | SHG | Other |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | -- | -- | -- | PNB,SBI | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Ngaibang | MR | 4 | -- | -- | -- | PNB | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Lura | LR | 16 | -- | -- | -- | PNB | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| North Garo Hills | Merongdik | UR | 9 | -- | -- | -- | SBI,MCAB | -- | SHG | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Samkalak Songma | MR | 12 | -- | -- | -- | SBI | -- | -- | HOME | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Garo Thorikakona | LR | 20 | -- | -- | -- | MCAB,SBI | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | -- | -- | -- | SBI | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Mawthabah | MR | 5 | -- | -- | -- | SBI | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Langpa | LR | 5 | -- | -- | -- | SBI | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **--** | -- | -- | -- | **--** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | 1 | 120000.00 | 0.0 | SBI,PNB | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| North Garo Hills | Rabha Thorikakona | CV | 21 | -- | -- | -- | SBI | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | -- | -- | -- | SBI | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **1** | **120000.00** | **--** | **--** | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Notes:**
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under Amount Saved / Amount Borrowed:**
n gives the number of responses to the query
$\bar{x}$ gives the arithmetical mean of the responses in Rs. (i.e. the average of the amounts saved / borrowed)
s. d. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

## *3.17. Social Capital [Batch V]*

### 3.17.1. SOCIAL CAPITAL - PARTICIPATION IN VILLAGE LEVEL ORGANIZATIONS

**Findings**

This sub-section gives discusses the social participation for both the project and control areas. Participation of the households from each area of project and control villages suggests involvement and active participation in different social groups in terms of social and financial aspects. As per the survey, participation by households in both project and control villages is very less.

Table-3.34 gives the participation by the households in different village level organizations such as:

- Self Help Group (SHG);
- User Group (UG);
- Farmer Producer Institution; and
- Any other organization (Non-political).

**Analysis**

From the above table, it is found that Self Help Groups (SHGs) have members in the project villages and control villages. Except for one village (where the sampled households belong to a User Group), there is no participation of the sampled households in any other type of village level organization.

The pertinent details are given as follows:

Self Help Groups (SHGs): The number of households participating in SHGs is very less in both project and control villages. As per survey, North Garo Hills have about 5% and 4% of the households who are members of SHGs in both project and control village respectively. But none of these SHGs are promoted under IWMP.

User Groups: There is no participation in User Groups by any members of the sampled households in both project and control villages.

Other Organizations: There is no participation of the household members in any other type of groups like Farmer producer Institution etc.

## Table-3.34: Social Capital (Part I) Participation [BATCH V]

| District | Village | Location | Households | Self Help Group | | | User Group | | | Farmer Producer Institution | | | Any Other Organization (Non-Political) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Yes | No | If Yes Details | Yes | No | If Yes Details | Yes | No | If Yes Details | Yes | No | If Yes Details |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | --- | 20 | -- | -- | 20 | -- | -- | 20 | -- | -- | 20 | -- |
| | Ngaibang | MR | 4 | -- | 4 | -- | -- | 4 | -- | -- | 4 | -- | -- | 4 | -- |
| | Lura | LR | 16 | -- | 16 | -- | -- | 16 | -- | -- | 16 | -- | -- | 16 | -- |
| North Garo Hills | Merongdik | UR | 9 | 1 | 8 | -- | -- | 9 | -- | -- | 9 | -- | -- | 9 | -- |
| | Samkalak Songma | MR | 12 | 1 | 11 | -- | -- | 12 | -- | -- | 12 | -- | -- | 12 | -- |
| | Garo Thorikakona | LR | 20 | 4 | 16 | -- | -- | 20 | -- | -- | 20 | -- | -- | 20 | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | -- | 21 | -- | -- | 21 | -- | -- | 21 | -- | -- | 21 | -- |
| | Mawthabah | MR | 5 | -- | 5 | -- | -- | 5 | -- | -- | 5 | -- | -- | 5 | -- |
| | Langpa | LR | 5 | -- | 5 | -- | -- | 5 | -- | -- | 5 | -- | -- | 5 | -- |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **6** | **106** | **--** | **--** | **112** | **--** | **--** | **112** | **--** | **--** | **112** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | -- | 20 | -- | -- | 20 | -- | -- | 20 | -- | -- | 20 | -- |
| North Garo Hills | Rabha Thorikakona | CV | 21 | 2 | 19 | -- | -- | 21 | -- | -- | 21 | -- | -- | 21 | -- |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | | 15 | -- | -- | 15 | -- | -- | 15 | -- | -- | 15 | -- |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **2** | **54** | **--** | **--** | **56** | **--** | **--** | **56** | **--** | **--** | **56** | **--** |

### 3.17.2. SOCIAL CAPITAL - SELF SUFFICIENCY OF THE HOUSEHOLDS

**Findings**

This sub-section gives discusses the social self sufficiency of the sampled households for both the project and control areas. Self sufficiency indicates the independent utilization and sustainability of certain necessities required by any household for a period of time. As per the survey, self sufficiency of each household is recorded under period of month/year. Table-3.35 gives the different categories of self sufficiency for items like:

- Food;
- Fodder;
- Fuel;
- Drinking water; and
- Employment.

**Analysis**

It is found that in both project and control villages, almost all households are citing 'round the year' as the months of self sufficiency in every category followed by '9-11 months' and vice-versa.

For essentials like food and drinking water, all the households gets sufficient food and drinking water 'round the year,' in both project and control villages. In the case of the other categories (fodder, fuel and employment); the sampled households are mostly self-sufficient for '9-11 months.' Some other sampled households have also cited '6-9 months', '3-6 months' and 'below 3 months' for the above categories.

The following table illustrates the summary of the results.

**Table 3.43: Self Sufficiency Status of the Sampled Households [BATCH V]**

| Category | Months of Self Sufficiency | No. of Household | |
|---|---|---|---|
| | | Project Village | Control Village |
| Food | Round the year | 111 | 56 |
| | 9-11 months | 1 | - |
| Fodder | Round the year | 29 | 20 |
| | 9-11 months | 80 | 36 |
| | 6-9 months | 3 | - |
| Fuel | Round the year | 88 | 36 |
| | 9-11 months | 24 | 20 |
| Drinking water | Round the year | 111 | 56 |
| | 6-9 months | 1 | - |
| Employment | Round the year | 16 | 2 |
| | 9-11 months | 69 | 42 |
| | 6-9 months | 14 | 9 |
| | 3-6 months | 10 | 3 |
| | Below 3 months | 3 | - |

## Table-3.35: Social Capital (Part I) Self Sufficiency [BATCH V]

| District | Village | Location | Households | No. of Households Reporting Self Sufficiency under Category | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Food | | | | | Fodder | | | | | Fuel | | | | | Drinking Water | | | | | Employment | | | | |
| | | | | Round the Year | 9-11 Months | 6-9 Months | 3-6 Months | Below 3 Months | Round the Year | 9-11 Months | 6-9 Months | 3-6 Months | Below 3 Months | Round the Year | 9-11 Months | 6-9 Months | 3-6 Months | Below 3 Months | Round the Year | 9-11 Months | 6-9 Months | 3-6 Months | Below 3 Months | Round the Year | 9-11 Months | 6-9 Months | 3-6 Months | Below 3 Months |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | 20 | -- | -- | -- | -- | -- | -- | 20 | -- | -- | 20 | -- | -- | -- | -- | 20 | -- | -- | -- | -- | -- | 20 | -- | -- | -- |
| | Ngaibang | MR | 4 | 4 | -- | -- | -- | -- | -- | -- | 4 | -- | -- | | 4 | -- | -- | -- | 4 | -- | -- | -- | -- | -- | 4 | -- | -- | -- |
| | Lura | LR | 16 | 16 | -- | -- | -- | -- | -- | -- | 16 | -- | -- | | 16 | -- | -- | -- | 16 | -- | -- | -- | -- | -- | 16 | -- | -- | -- |
| North Garo Hills | Merongdik | UR | 9 | 9 | -- | -- | -- | -- | -- | 8 | 1 | -- | -- | 8 | 1 | -- | -- | -- | 9 | -- | -- | -- | -- | 1 | 1 | 2 | 4 | 1 |
| | Samkalak Songma | MR | 12 | 12 | -- | -- | -- | -- | -- | 9 | 3 | -- | -- | 9 | 3 | -- | -- | -- | 11 | 1 | -- | -- | -- | 1 | 4 | | 6 | 1 |
| | Garo Thorikakona | LR | 20 | 19 | 1 | -- | -- | -- | -- | 12 | 5 | 3 | -- | 20 | -- | -- | -- | -- | 20 | -- | -- | -- | -- | 4 | 3 | 12 | | 1 |
| South West Khasi Hills | Wahkaji | UR | 21 | 21 | -- | -- | -- | -- | -- | -- | 21 | -- | -- | 21 | -- | -- | -- | -- | 21 | -- | -- | -- | -- | 6 | 15 | -- | -- | -- |
| | Mawthabah | MR | 5 | 5 | -- | -- | -- | -- | -- | -- | 5 | -- | -- | 5 | -- | -- | -- | -- | 5 | -- | -- | -- | -- | 3 | 2 | -- | -- | -- |
| | Langpa | LR | 5 | 5 | -- | -- | -- | -- | -- | -- | 5 | -- | -- | 5 | -- | -- | -- | -- | 5 | -- | -- | -- | -- | 1 | 4 | -- | -- | -- |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **111** | **1** | **--** | **--** | **--** | **--** | **29** | **80** | **3** | **--** | **88** | **24** | **--** | **--** | **--** | **111** | **1** | **--** | **--** | **--** | **16** | **69** | **14** | **10** | **3** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | 20 | -- | -- | -- | -- | -- | -- | 20 | -- | -- | -- | 20 | -- | -- | -- | 20 | -- | -- | -- | -- | -- | 20 | -- | -- | -- |
| North Garo Hills | Rabha Thorikakona | CV | 21 | 21 | -- | -- | -- | -- | -- | 20 | 1 | -- | -- | 21 | -- | -- | -- | -- | 21 | -- | -- | -- | -- | 2 | 7 | 9 | 3 | |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | 15 | -- | -- | -- | -- | -- | -- | 15 | -- | -- | 15 | -- | -- | -- | -- | 15 | -- | -- | -- | -- | -- | 15 | -- | -- | -- |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **56** | **--** | **--** | **--** | **--** | **--** | **20** | **36** | **--** | **--** | **36** | **20** | **--** | **--** | **--** | **56** | **--** | **--** | **--** | **--** | **2** | **42** | **9** | **3** | **--** |

**Note:** UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

## *3.18. Access to Services*

The following sub-sections discuss the access of the sampled households to various services such as: agricultural extension services, education, health, veterinary services, credit facility, farm inputs and access to markets for their farm produces.

The pertinent discussion is available as follows.

### 3.18.1. AGRI-EXTENSION SERVICES & CREDIT

**Findings**

Table-3.36 (available at next page) indicates the findings of the access of the sampled households to the following services:

- Agricultural Extension Services
- Credit Facility

**Analysis**

*Access to Agricultural Extension Services*

**Project Villages:** Out of the total 112 households, all the households have no access to agricultural services.

**Control Villages:** In the control village, out of the total number of 56 households, none of the households have access to agricultural services.

*Access to Credit Facilities*

**Project Village:** As shown in the table, all of the households have access to credit services.

**Control Village:** 56 of the total households have access to credit facilities.

*Distance to the Facilities (Agricultural Extension Facility & Credit Facility)*

The following table gives the number of households having agricultural services and credit facilities within specified distances.

**Nos. of Sampled Households having Facility within Indicated Distances [Agricultural Extension Facility & Credit Facility]**

| **Project Village** | | |
|---|---|---|
| | **Agricultural Extension Services** | **Credit Facility** |
| Within village (0) | 0 | 20 |
| Within 5 km (1) | 0 | 4 |
| More than 5 km (2) | 0 | 88 |
| **Control Village** | | |
| | **Agricultural Extension Services** | **Credit Facility** |
| Within village (0) | 0 | 0 |
| Within 5 km (1) | 0 | 0 |
| More than 5 km (2) | 0 | 56 |

## Table-3.36 AGRI-EXTENSION SERVICES & CREDIT [BATCH-V]

| District | Village | Location | Households | Agricultural Extension Services | | | | | | | Credit Facility | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Access | | If Access = Yes | | | | | Access | | If Access = Yes | | | | |
| | | | | | | Who Provides | Where - Nos. of Households who have marked (*) | | | Frequency of Use | | | Who Provides | Nos. of Households who have marked (*) | | | Frequency of Use |
| | | | | Yes | No | | 0 | 1 | 2 | | Yes | No | | 0 | 1 | 2 | |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | -- | N | -- | -- | -- | -- | -- | Y | -- | -- | 20 | -- | -- | Monthly |
| | Ngaibang | MR | 4 | -- | N | -- | -- | -- | -- | -- | Y | -- | -- | -- | 4 | -- | Monthly |
| | Lura | LR | 16 | -- | N | -- | -- | -- | -- | -- | Y | -- | -- | -- | -- | 16 | Monthly |
| North Garo Hills | Merongdik | UR | 9 | -- | N | -- | -- | -- | -- | -- | Y | -- | -- | -- | -- | 9 | Monthly |
| | Samkalak Songma | MR | 12 | -- | N | -- | -- | -- | -- | -- | Y | -- | -- | -- | -- | 12 | -- |
| | Garo Thorikakona | LR | 20 | -- | N | -- | -- | -- | -- | -- | Y | -- | -- | -- | -- | 20 | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | -- | N | -- | -- | -- | -- | -- | Y | -- | -- | -- | -- | 21 | Monthly |
| | Mawthabah | MR | 5 | -- | N | -- | -- | -- | -- | -- | Y | -- | -- | -- | -- | 5 | Monthly |
| | Langpa | LR | 5 | -- | N | -- | -- | -- | -- | -- | Y | -- | -- | -- | -- | 5 | Monthly |
| **TOTAL / AVERAGE** | | **PROJECT** | **112** | **--** | -- | -- | -- | -- | -- | -- | -- | -- | -- | **20** | **4** | **88** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | -- | N | -- | -- | -- | -- | -- | Y | -- | -- | -- | -- | 20 | Monthly |
| North Garo Hills | Rabha Thorikakona | CV | 21 | -- | N | -- | -- | -- | -- | -- | Y | -- | -- | -- | -- | 21 | -- |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | -- | N | -- | -- | -- | -- | -- | Y | -- | -- | -- | -- | 15 | Monthly |
| **TOTAL / AVERAGE** | | **CONTROL** | **56** | | -- | | -- | -- | -- | -- | -- | -- | -- | -- | -- | **56** | **--** |

**Notes:**
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**(*) Under 'Where Provided' scores have been given as follows**:
0 for within village, 1 for within 5 km, 2 for more than 5 km

### 3.18.2. HEALTH & EDUCATION

**Findings**

Table-3.37 (available at next page) indicates the findings of the access of the sampled households to the following services:

- Health facility; and
- Educational Facility.

**Analysis**

*Access to Health Facility*

**Project Village:** As per the total of 112 households, they all have access to health services.

**Control Village:** Out of the 56 households in the control village, all have access to health services.

*Access to Educational Facility*

**Project Village:** In the project village, 112 households have access to educational services.

**Control Village:** 56 households have access to educational services.

*Distance to the Facilities (Health & Educational Facility)*

The following table gives the number of households having health and educational facilities within specified distances.

**Table __: Sampled Households having Facility within Indicated Distances [Health & Educational Facilities]**

| Project Village | | |
|---|---|---|
| | **Health** | **Education** |
| Within village (0) | 20 | 112 |
| Within 5 km (1) | 4 | 0 |
| More than 5 km (2) | 88 | 0 |
| **Control Village** | | |
| | **Health** | **Education** |
| Within village (0) | 20 | 56 |
| Within 5 km (1) | 0 | 0 |
| More than 5 km (2) | 36 | 0 |

## Table-3.37 Health & Education [BATCH-V]

| District | Village | Location | Households | Health | | | | | | | Education | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Access | | If Access = Yes | | | | | Access | | If Access = Yes | | | | |
| | | | | | | Who Provides | Where -Nos. of Households who have marked (*) | | | Frequency of Use | | | Who Provides | Nos. of Households who have marked (*) | | | Frequency of Use |
| | | | | Yes | No | | 0 | 1 | 2 | | Yes | No | | 0 | 1 | 2 | |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | Y | -- | -- | 20 | -- | -- | -- | Y | -- | -- | 20 | -- | -- | Daily |
| | Ngaibang | MR | 4 | Y | -- | -- | -- | 4 | -- | -- | Y | -- | -- | 4 | -- | -- | Daily |
| | Lura | LR | 16 | Y | -- | -- | -- | -- | 16 | -- | Y | -- | -- | 16 | -- | -- | Daily |
| North Garo Hills | Merongdik | UR | 9 | Y | -- | -- | -- | -- | 9 | -- | Y | -- | -- | 9 | -- | -- | Daily |
| | Samkalak Songma | MR | 12 | Y | -- | -- | -- | -- | 12 | -- | Y | -- | -- | 12 | -- | -- | Daily |
| | Garo Thorikakona | LR | 20 | Y | -- | -- | -- | -- | 20 | -- | Y | -- | -- | 20 | -- | -- | Daily |
| South West Khasi Hills | Wahkaji | UR | 21 | Y | -- | -- | -- | -- | 21 | -- | Y | -- | -- | 21 | -- | -- | Daily |
| | Mawthabah | MR | 5 | Y | -- | -- | -- | -- | 5 | -- | Y | -- | -- | 5 | -- | -- | Daily |
| | Langpa | LR | 5 | Y | -- | -- | -- | -- | 5 | -- | Y | -- | -- | 5 | -- | -- | Daily |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **--** | **--** | **--** | **20** | **4** | **88** | **--** | -- | **--** | **--** | **112** | **--** | **--** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | Y | -- | -- | 20 | -- | -- | -- | Y | -- | -- | 20 | -- | -- | Daily |
| North Garo Hills | Rabha Thorikakona | CV | 21 | Y | -- | -- | -- | -- | 21 | -- | Y | -- | -- | 21 | -- | -- | Daily |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | Y | -- | -- | -- | -- | 15 | -- | Y | -- | -- | 15 | -- | -- | Daily |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **--** | **--** | **--** | **20** | **--** | **36** | **--** | **--** | **--** | **--** | **56** | **--** | **--** | **--** |

**Notes:**
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**(*) Under 'Where Provided' scores have been given as follows**:
0 for within village, 1 for within 5 km, 2 for more than 5 km

### 3.18.3. VETERINARY SERVICES

**Findings**

Table-3.38 (available at next page) indicates the findings of the access of the sampled households to the following veterinary services:

- Veterinary Services - Health Camp; and
- Veterinary Services - Artificial Insemination Services.

**Analysis**

*Access to Veterinary Services- Health Camp*

**Project Village:** In the project village, out of the total 112 households, 41 households have access to Veterinary Services- Health camp.

**Control Village:** Out of the 56 households, 21 households have access to Veterinary Services- Health camp.

*Access to Veterinary Services- Artificial Insemination Services*

**Project Village:** Out of the total 112 households, all have no access to Veterinary Services- Artificial Insemination Services.

**Control Village:** In the control village, 56 of the total households have no access to Veterinary Services- Artificial Insemination Services.

*Distance to the Facilities (Veterinary Services)*

The following table gives the number of households having the given veterinary services (health camp and artificial insemination services) within specified distances.

**Table __: Sampled Households having Facility within Indicated Distances [Veterinary Services]**

| **Project Village** | | |
|---|---|---|
| | **Veterinary Services - Health Camp** | **Veterinary Services - Artificial Insemination Services** |
| Within village (0) | 0 | 0 |
| Within 5 km (1) | 20 | 0 |
| More than 5 km (2) | 21 | 0 |
| **Control Village** | | |
| | **Veterinary Services - Health Camp** | **Veterinary Services - Artificial Insemination Services** |
| Within village (0) | 0 | 0 |
| Within 5 km (1) | 21 | 0 |
| More than 5 km (2) | 0 | 0 |

## Table-3.38 Veterinary Services [BATCH-V]

| District | Village | Location | Households | Veterinary Services - Health Camp | | | | | | | Veterinary Services - Artificial Insemination Services | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Access | | If Access = Yes | | | | | Access | | If Access = Yes | | | | |
| | | | | | | Who Provides | Where -Nos. of Households who have marked (*) | | | Frequency of Use | | | Who Provides | Nos. of Households who have marked (*) | | | Frequency of Use |
| | | | | Yes | No | | 0 | 1 | 2 | | Yes | No | | 0 | 1 | 2 | |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| | Ngaibang | MR | 4 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| | Lura | LR | 16 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| North Garo Hills | Merongdik | UR | 9 | Y | -- | -- | -- | | 9 | -- | -- | N | -- | -- | -- | -- | -- |
| | Samkalak Songma | MR | 12 | Y | -- | -- | -- | -- | 12 | -- | -- | N | -- | -- | -- | -- | -- |
| | Garo Thorikakona | LR | 20 | Y | -- | -- | -- | 20 | -- | -- | -- | N | -- | -- | -- | -- | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| | Mawthabah | MR | 5 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| | Langpa | LR | 5 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | -- | -- | -- | -- | **20** | **21** | **--** | **--** | **--** | **--** | -- | -- | -- | -- |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | -- | N | -- | -- | | -- | -- | -- | N | -- | -- | -- | -- | -- |
| North Garo Hills | Rabha Thorikakona | CV | 21 | Y | -- | -- | -- | 21 | -- | -- | -- | N | -- | -- | -- | -- | -- |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | -- | N | -- | -- | | -- | -- | -- | N | -- | -- | -- | -- | -- |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **--** | **--** | **--** | **--** | **21** | **--** | **--** | **--** | **--** | **--** | -- | -- | -- | -- |

**Notes:**
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**(*) Under 'Where Provided' scores have been given as follows**:
0 for within village, 1 for within 5 km, 2 for more than 5 km

### 3.18.4. FARM INPUTS - 1

**Findings**

Table-3.39 (available at next page) indicates the findings regarding the access of the sampled households to the following farm inputs:

- Farm Inputs- HYV seeds; and
- Farm Inputs- Fertilizers.

**Analysis**

*Access to Farm Inputs- HYV seeds*

**Project Village:** In the project village, out of the total 112 households have no access to farm inputs- HYV seeds.

**Control Village:** Out of the 56 households, 20 households have access to farm inputs- HYV seeds.

*Access to Farm Inputs- Fertilizers*

**Project Village:** Out of the total 112 households, 31 of the households have access to farm inputs- fertilizers.

**Control Village:** In the control village, out of 56 of the total households, 35 have access to farm inputs- fertilizers.

*Distance to the Facilities (Farm Inputs - HYV Seeds & Fertilizers)*

The following table gives the number of households having access to the given farm inputs (HYV Seeds and Fertilizers) within specified distances.

**Table __: Sampled Households having Facility within Indicated Distances [Farm Inputs - HYV Seeds & Fertilizers]**

| **Project Village** | | |
|---|---|---|
| | **Farm Inputs - HYV Seeds** | **Farm Inputs - Fertilizers** |
| Within village (0) | 0 | 0 |
| Within 5 km (1) | 0 | 0 |
| More than 5 km (2) | 0 | 31 |
| **Control Village** | | |
| | **Farm Inputs - HYV Seeds** | **Farm Inputs - Fertilizers** |
| Within village (0) | 0 | 0 |
| Within 5 km (1) | 0 | 0 |
| More than 5 km (2) | 20 | 35 |

## Table-3.39 (A) Farm Inputs – 1 [BATCH-V]

| District | Village | Location | Households | Farm Inputs - HYV Seeds | | | | | | | Farm Inputs – Fertilizers | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Access | | If Access = Yes | | | | | Access | | If Access = Yes | | | | |
| | | | | | | Who Provides | Where -Nos. of Households who have marked (*) | | | Frequency of Use | | | Who Provides | Nos. of Households who have marked (*) | | | Frequency of Use |
| | | | | Yes | No | | 0 | 1 | 2 | | Yes | No | | 0 | 1 | 2 | |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| | Ngaibang | MR | 4 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| | Lura | LR | 16 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| North Garo Hills | Merongdik | UR | 9 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| | Samkalak Songma | MR | 12 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| | Garo Thorikakona | LR | 20 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | -- | N | -- | -- | -- | -- | -- | Y | -- | -- | -- | -- | 21 | Quarterly |
| | Mawthabah | MR | 5 | -- | N | -- | -- | -- | -- | -- | Y | -- | -- | -- | -- | 5 | Quarterly |
| | Langpa | LR | 5 | -- | N | -- | -- | -- | -- | -- | Y | -- | -- | -- | -- | 5 | Quarterly |
| **TOTAL / AVERAGE** | | **PROJECT** | **112** | **pp** | -- | **pp** | -- | -- | -- | -- | -- | **--** | **--** | **--** | **--** | **31** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | Y | -- | -- | -- | -- | 20 | -- | Y | -- | -- | -- | -- | 20 | -- |
| North Garo Hills | Rabha Thorikakona | CV | 21 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | -- | N | -- | -- | -- | -- | -- | Y | | -- | -- | -- | 15 | Quarterly |
| **TOTAL / AVERAGE** | | **CONTROL** | **56** | **--** | **--** | **--** | **--** | **--** | **20** | **--** | **--** | **--** | **--** | **--** | **--** | **35** | **--** |

**Notes:**
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**(*) Under 'Where Provided' scores have been given as follows**:
0 for within village, 1 for within 5 km, 2 for more than 5 km

### 3.18.5. FARM INPUTS - 2

**Findings**

Table-3.40 (available at next page) indicates the findings regarding the access of the sampled households to the following farm inputs:

- Farm Inputs- Pesticides; and
- Farm Inputs- Herbicides (weed killers).

**Analysis**

*Access to Farm Inputs- Pesticides*

**Project Village:** In the project village, out of the total 112 households, 31 households have access to pesticides.

**Control Village:** Out of the 56 households, 35 households have access to pesticides.

*Access to Farm Inputs- Herbicides*

**Project Village:** All of the total 112 households have no access farm inputs-herbicides.

**Control Village:** In the control village, out of 56 of the total households, 20 households have access to herbicides.

*Distance to the Facilities (Farm Inputs - Pesticides & Herbicides)*

The following table gives the number of households having access to the given farm inputs (Pesticides and Herbicides) within specified distances.

**Table ___: Nos. of Sampled Households having Facility within Indicated Distances [Farm Inputs - Pesticides and Herbicides]**

| **Project Village** | | |
|---|---|---|
| | **Farm Inputs – Pesticides** | **Farm Inputs - Herbicides** |
| Within village (0) | 0 | 0 |
| Within 5 km (1) | 0 | 0 |
| More than 5 km (2) | 31 | 0 |
| **Control Village** | | |
| | **Farm Inputs – Pesticides** | **Farm Inputs - Herbicides** |
| Within village (0) | 0 | 0 |
| Within 5 km (1) | 0 | 0 |
| More than 5 km (2) | 35 | 20 |

## Table-3.40 (B) Farm Inputs – 2 [BATCH-V]

| District | Village | Location | Households | Farm Inputs - Pesticides | | | | | | | Farm Inputs – Herbicides | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Access | | If Access = Yes | | | | | Access | | If Access = Yes | | | | |
| | | | | | | Who Provides | Where -Nos. of Households who have marked (*) | | | Frequency of Use | | | Who Provides | Nos. of Households who have marked (*) | | | Frequency of Use |
| | | | | Yes | No | | 0 | 1 | 2 | | Yes | No | | 0 | 1 | 2 | |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| | Ngaibang | MR | 4 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| | Lura | LR | 16 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| North Garo Hills | Merongdik | UR | 9 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| | Samkalak Songma | MR | 12 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| | Garo Thorikakona | LR | 20 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | -- | -- | -- | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | Y | -- | -- | -- | -- | 21 | -- | -- | N | -- | -- | -- | -- | -- |
| | Mawthabah | MR | 5 | Y | -- | -- | -- | -- | 5 | -- | -- | N | -- | -- | -- | -- | -- |
| | Langpa | LR | 5 | Y | -- | -- | -- | -- | 5 | -- | -- | N | -- | -- | -- | -- | -- |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **--** | **--** | **--** | **--** | **--** | **31** | **--** | **--** | **--** | **--** | -- | -- | -- | -- |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | Y | -- | -- | -- | -- | 20 | -- | Y | -- | -- | -- | -- | 20 | -- |
| North Garo Hills | Rabha Thorikakona | CV | 21 | -- | N | -- | -- | -- | | -- | -- | N | -- | -- | -- | -- | -- |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | Y | -- | -- | -- | -- | 15 | -- | | N | -- | -- | -- | | -- |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **--** | **--** | **--** | **--** | **--** | **35** | **--** | **--** | **--** | -- | -- | -- | **20** | **--** |

**Notes:**
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**(*) Under 'Where Provided' scores have been given as follows**:
0 for within village, 1 for within 5 km, 2 for more than 5 km

### 3.18.6. FARM INPUTS - 3

**Findings**

Table-3.41 (available at next page) indicates the findings regarding the access of the sampled households to the following farm inputs:

- Farm inputs- Diesel

**Analysis**

*Access to Farm Inputs- Diesel*

**Project Village:** None of the 112 households have access to Farm Inputs- Diesel

**Control Village:** Out of the 56 households, 20 households have access to Farm Inputs- Diesel.

*Distance to the Facilities (Farm Inputs - Diesel)*

The following table gives the number of households having access to the given farm inputs (diesel) within specified distances.

**Table __: Nos. of Sampled Households having Facility within Indicated Distances [Farm Inputs - Diesel]**

| **Project Village** | |
|---|---|
| | **Farm Inputs – Diesel** |
| Within village (0) | 0 |
| Within 5 km (1) | 0 |
| More than 5 km (2) | 0 |
| **Control Village** | |
| | **Farm Inputs – Diesel** |
| Within village (0) | 0 |
| Within 5 km (1) | 0 |
| More than 5 km (2) | 20 |

## Table-3.41 (C) Farm Inputs – 3 [BATCH-V]

| District | Village | Location | Households | Farm Inputs – Diesel | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Access | | If Access = Yes | | | | |
| | | | | | | Who Provides | Where -Nos. of Households who have marked (*) | | | Frequency of Use |
| | | | | Yes | No | | 0 | 1 | 2 | |
| **PROJECT VILLAGE** | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | -- | N | -- | -- | -- | -- | -- |
| | Ngaibang | MR | 4 | -- | N | -- | -- | -- | -- | -- |
| | Lura | LR | 16 | -- | N | -- | -- | -- | -- | -- |
| North Garo Hills | Merongdik | UR | 9 | -- | N | -- | -- | -- | -- | -- |
| | Samkalak Songma | MR | 12 | -- | N | -- | -- | -- | -- | -- |
| | Garo Thorikakona | LR | 20 | -- | N | -- | -- | -- | -- | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | -- | N | -- | -- | -- | -- | -- |
| | Mawthabah | MR | 5 | -- | N | -- | -- | -- | -- | -- |
| | Langpa | LR | 5 | -- | N | -- | -- | -- | -- | -- |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **--** | **--** | -- | -- | -- | -- | -- |
| **CONTROL VILLAGE** | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | Y | -- | -- | -- | -- | 20 | -- |
| North Garo Hills | Rabha Thorikakona | CV | 21 | -- | N | -- | -- | -- | -- | -- |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | -- | N | -- | -- | -- | -- | -- |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **--** | **--** | **--** | **--** | **--** | **20** | **--** |

**Notes:**
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**(*) Under 'Where Provided' scores have been given as follows**:
0 for within village, 1 for within 5 km, 2 for more than 5 km

### 3.18.7. MARKET FOR FARM PRODUCE-1

**Findings**

Table-3.42 (available at next page) indicates the findings regarding the access of the sampled households to the following markets:

- Market for Crops; and
- Market for Orchard output.

**Analysis**

*Access to Market for Crops*

**Project Village:** In the project village, out of the total 112 households, 103 households have access to market for crops.

**Control Village:** All of the households have access to the market for crops.

*Access to Market for Orchard Output*

**Project Village:** Out of the total 112 households, 71 households have access for marketing of orchard outputs.

**Control Village:** In the control village, out of the 56 households, 35 households have access to marketing of orchard outputs.

*Distance to the Markets (Crops & Orchard Output)*

The following table gives the number of households having access to the markets for crops and orchard output within specified distances.

**Table __: Nos. of Sampled Households having Market within Indicated Distances**

| **Project Village** | | |
|---|---|---|
| | **Market for Crops** | **Market for Orchard Output** |
| Within village (0) | 36 | 36 |
| Within 5 km (1) | 4 | 4 |
| More than 5 km (2) | 63 | 31 |
| **Control Village** | | |
| | **Market for Crops** | **Market for Orchard Output** |
| Within village (0) | 0 | 0 |
| Within 5 km (1) | 21 | 0 |
| More than 5 km (2) | 35 | 35 |

## Table-3.42 (A) Market for Farm Produce-1 [BATCH-V]

| District | Village | Location | Households | Market for – Crops | | | | | Market for - Orchard Output | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Access to Market | | If Yes | | | Access to Market | | If Yes | | |
| | | | | Yes | No | Where Sold | Location | When Sold | Yes | No | Where Sold | Location | When Sold |
| **PROJECT VILLAGE** | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | Y | -- | 0 | -- | Weekly | Y | -- | 0 | -- | Weekly |
| | Ngaibang | MR | 4 | Y | -- | 1 | -- | Weekly | Y | -- | 1 | -- | Weekly |
| | Lura | LR | 16 | Y | -- | 0 | -- | Weekly | Y | -- | 0 | -- | Weekly |
| North Garo Hills | Merongdik | UR | 9 | -- | N | | -- | -- | -- | N | -- | -- | -- |
| | Samkalak Songma | MR | 12 | Y | -- | 2 | -- | -- | -- | N | -- | -- | -- |
| | Garo Thorikakona | LR | 20 | Y | -- | 2 | -- | -- | -- | N | -- | -- | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | Y | -- | 2 | -- | Weekly | Y | -- | 2 | -- | Weekly |
| | Mawthabah | MR | 5 | Y | -- | 2 | -- | Weekly | Y | -- | 2 | -- | Weekly |
| | Langpa | LR | 5 | Y | -- | 2 | -- | Weekly | Y | -- | 2 | -- | Weekly |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **--** | **--** | **8** | **--** | **--** | **--** | **--** | -- | **--** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | Y | -- | 2 | -- | Weekly | Y | -- | 2 | -- | Weekly |
| North Garo Hills | Rabha Thorikakona | CV | 21 | Y | -- | 1 | -- | -- | -- | N | -- | -- | -- |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | Y | -- | 2 | -- | Weekly | Y | -- | 2 | -- | Weekly |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **--** | **--** | **3** | **--** | **--** | **--** | **--** | **2** | **--** | **--** |

**Notes:**
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**(*) Under 'Where Provided' scores have been given as follows**:
0 for within village, 1 for within 5 km, 2 for more than 5 km

### 3.18.8. MARKET FOR FARM PRODUCE-2

**Findings**

Table-3.43 (available at next page) indicates the findings regarding the access of the sampled households to the following markets:

- Market for livestock; and
- Market for fisheries.

**Analysis**

*Access to Market for Livestock*

**Project Village:** In the project village, out of the total 112 households, 103 households have access for marketing livestock.

**Control Village:** Out of the total number of 56 households, all have access for marketing livestock.

*Access to Market for Fisheries*

**Project Village:** Out of the total 112 households, 40 households have access for marketing fisheries.

**Control Village:** Out of the total 56 households, 20 households have access for marketing fisheries.

*Distance to the Markets (Livestock & Fishery)*

The following table gives the number of households having access to the markets for livestock and fishery within specified distances.

**Table __: Nos. of Sampled Households having Market within Indicated Distances [Livestock & Fishery]**

| **Project Village** | | |
|---|---|---|
| | **Market for Livestock** | **Market for Fisheries** |
| Within village (0) | 36 | 36 |
| Within 5 km (1) | 4 | 4 |
| More than 5 km (2) | 63 | 0 |
| **Control Village** | | |
| | **Market for Livestock** | **Market for Fisheries** |
| Within village (0) | 0 | 0 |
| Within 5 km (1) | 31 | 0 |
| More than 5 km (2) | 35 | 20 |

## Table-3.43 (B) Market for Farm Produce-2 [BATCH-V]

| District | Village | Location | Households | Market for - Livestock | | | | | Market for – Fishery | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Access to Market | | If Yes | | | Access to Market | | If Yes | | |
| | | | | Yes | No | Where Sold | Location | When Sold | Yes | No | Where Sold | Location | When Sold |
| **PROJECT VILLAGE** | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | Y | -- | 0 | -- | Weekly | Y | -- | 0 | -- | Weekly |
| | Ngaibang | MR | 4 | Y | -- | 1 | -- | Weekly | Y | -- | 1 | -- | Weekly |
| | Lura | LR | 16 | Y | -- | 0 | -- | Weekly | Y | -- | 0 | -- | Weekly |
| North Garo Hills | Merongdik | UR | 9 | -- | N | -- | -- | -- | -- | N | -- | -- | -- |
| | Samkalak Songma | MR | 12 | Y | -- | 2 | -- | -- | -- | N | -- | -- | -- |
| | Garo Thorikakona | LR | 20 | Y | -- | 2 | -- | -- | -- | N | -- | -- | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | Y | -- | 2 | -- | Weekly | -- | N | -- | -- | -- |
| | Mawthabah | MR | 5 | Y | -- | 2 | -- | Weekly | -- | N | -- | -- | -- |
| | Langpa | LR | 5 | Y | -- | 2 | -- | Weekly | -- | N | -- | -- | -- |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **--** | **--** | **8** | **--** | **--** | **--** | **--** | **3** | **--** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | Y | -- | 2 | -- | Weekly | Y | -- | 2 | -- | Weekly |
| North Garo Hills | Rabha Thorikakona | CV | 21 | Y | -- | 1 | -- | -- | -- | N | -- | -- | -- |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | Y | -- | 2 | -- | Weekly | -- | N | -- | -- | -- |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **--** | **--** | **3** | **--** | **--** | **--** | **--** | **1** | **--** | **--** |

**Notes:**
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**(*) Under 'Where Provided' scores have been given as follows**:
0 for within village, 1 for within 5 km, 2 for more than 5 km

### 3.18.9. MARKET FOR FARM PRODUCE-3

**Findings**

Table-3.44 (available at next page) indicates the findings regarding the access of the sampled households to the following market:

- Market for NTFP

**Analysis**

*Access to Market for NTFP*

**Project Village:** As per the total 112 number of households, 71 households have access to market NTFP.

**Control Village:** Out of the 56 households, 35 households have access to market NTFP.

*Distance to the Markets (NTFP)*

The following table gives the number of households having access to the markets for NTFP within specified distances.

**Table __: Nos. of Sampled Households having Market within Indicated Distances [NTFP]**

| **Project Village** | |
|---|---|
| | **Market for - NTFP** |
| Within village (0) | 20 |
| Within 5 km (1) | 4 |
| More than 5 km (2) | 47 |
| **Control Village** | |
| | **Market for - NTFP** |
| Within village (0) | 0 |
| Within 5 km (1) | 0 |
| More than 5 km (2) | 35 |

## Table-3.44 (C) Market for Farm Produce-3 [BATCH-V]

| District | Village | Location | Households | Market for - NTFP | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Access to Market | | If Yes | | |
| | | | | Yes | No | Where Sold | Location | When Sold |
| **PROJECT VILLAGE** | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | Y | -- | 0 | -- | Weekly |
| | Ngaibang | MR | 4 | Y | -- | 1 | -- | Weekly |
| | Lura | LR | 16 | Y | -- | 2 | -- | Weekly |
| North Garo Hills | Merongdik | UR | 9 | -- | N | -- | -- | -- |
| | Samkalak Songma | MR | 12 | -- | N | -- | -- | -- |
| | Garo Thorikakona | LR | 20 | -- | N | -- | -- | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | Y | -- | 2 | -- | Monthly |
| | Mawthabah | MR | 5 | Y | -- | 2 | -- | Monthly |
| | Langpa | LR | 5 | Y | -- | 2 | -- | -- |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **--** | **--** | **6** | **--** | **--** |
| **CONTROL VILLAGE** | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | Y | -- | 2 | -- | Weekly |
| North Garo Hills | Rabha Thorikakona | CV | 21 | -- | N | -- | -- | -- |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | Y | -- | 2 | -- | -- |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **--** | **--** | **2** | **--** | **--** |

**Notes:**
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**(*) Under 'Where Provided' scores have been given as follows**:
0 for within village, 1 for within 5 km, 2 for more than 5 km

### 3.18.10. MOBILE & ATM / BANK

**Findings**

Table-3.45 (available at next page) indicates the findings regarding the access of the sampled households to the following services:

- Mobile connectivity; and
- ATM & Bank.

**Analysis**

*Access to Mobile Connectivity*

**Project Village:** In the project village, all of the 112 households have access to mobile connectivity.

**Control Village:** All of the 56 households have access to mobile connectivity.

*Access to ATM & Banks*

**Project Village:** All of the 112 households have access to ATM & banks

**Control Village:** All of the 56 households have access to ATM & banks

*Distance to Services (Mobile Connectivity & ATM / Bank)*

The following table gives the number of households having access to the services like Mobile Connectivity and Bank / ATM Services within specified distances.

**Table __: Nos. of Sampled Households having Access to Services within Indicated Distances**
**[Mobile Connectivity & ATM / BANK]**

| **Project Village** | | |
|---|---|---|
| | **Mobile Connectivity** | **ATM & BANK** |
| Within village (0) | 0 | 0 |
| Within 5 km (1) | 0 | 0 |
| More than 5 km (2) | 112 | 112 |
| **Control Village** | | |
| | **Mobile Connectivity** | **ATM & BANK** |
| Within village (0) | 0 | 0 |
| Within 5 km (1) | 21 | 21 |
| More than 5 km (2) | 35 | 35 |

## Table-3.45 Mobile & ATM / BANK [BATCH-V]

| District | Village | Location | Households | Mobile Connectivity | | | | | | | ATM & BANK | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Access | | If Access = Yes | | | | | Access | | If Access = Yes | | | | |
| | | | | | | Who Provides | Where -Nos. of Households who have marked (*) | | | Frequency of Use | | | Who Provides | Nos. of Households who have marked (*) | | | Frequency of Use |
| | | | | Yes | No | | 0 | 1 | 2 | | Yes | No | | 0 | 1 | 2 | |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | Y | -- | -- | -- | -- | 20 | Weekly | Y | -- | -- | -- | -- | 20 | Monthly |
| | Ngaibang | MR | 4 | Y | -- | -- | -- | -- | 4 | Weekly | Y | -- | -- | -- | -- | 4 | Monthly |
| | Lura | LR | 16 | Y | -- | -- | -- | -- | 16 | Weekly | Y | -- | -- | -- | -- | 16 | Monthly |
| North Garo Hills | Merongdik | UR | 9 | Y | -- | -- | -- | -- | 9 | -- | Y | -- | -- | -- | -- | 9 | -- |
| | Samkalak Songma | MR | 12 | Y | -- | -- | -- | -- | 12 | -- | Y | -- | -- | -- | -- | 12 | -- |
| | Garo Thorikakona | LR | 20 | Y | -- | -- | -- | -- | 20 | -- | Y | -- | -- | -- | -- | 20 | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | Y | -- | -- | -- | -- | 21 | Weekly | Y | -- | -- | -- | -- | 21 | Monthly |
| | Mawthabah | MR | 5 | Y | -- | -- | -- | -- | 5 | Weekly | Y | -- | -- | -- | -- | 5 | Monthly |
| | Langpa | LR | 5 | Y | -- | -- | -- | -- | 5 | Weekly | Y | -- | -- | -- | -- | 5 | Monthly |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | | -- | -- | -- | -- | **112** | | -- | -- | -- | -- | -- | **112** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | Y | -- | -- | -- | -- | 20 | Weekly | Y | -- | -- | -- | -- | 20 | Monthly |
| North Garo Hills | Rabha Thorikakona | CV | 21 | Y | -- | -- | -- | 21 | -- | -- | Y | -- | -- | -- | 21 | -- | -- |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | Y | -- | -- | -- | -- | 15 | Weekly | Y | -- | -- | -- | -- | 15 | Monthly |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **--** | **--** | **--** | **--** | **21** | **35** | **--** | **--** | -- | -- | -- | **21** | **35** | **--** |

**Notes:**
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**(*) Under 'Where Provided' scores have been given as follows**:
0 for within village, 1 for within 5 km, 2 for more than 5 km

### 3.18.11. WORKSHOP FOR MACHINERY & VEHICLES

**Findings**

Table-3.46 (available at next page) indicates the findings regarding the access of the sampled households to the following services:

- Workshop for machinery & vehicles

**Analysis**

*Access to Workshop for machinery & vehicles*

**Project Village:** As per the total number of 112 households, 92 households have access to workshop for machinery & vehicles.

**Control Village:** All of the 56 households have access to workshop for machinery & vehicles.

*Distance to Services (Workshop for Machinery & Vehicles)*

The following table gives the number of households having access to the markets for NTFP within specified distances.

**Table __: Nos. of Sampled Households having Access to Services within Indicated Distances**
**[Workshop for Machinery & Vehicles]**

| **Project Village** | |
|---|---|
| | **Workshop for machinery & vehicles** |
| Within village (0) | 0 |
| Within 5 km (1) | 0 |
| More than 5 km (2) | 92 |
| **Control Village** | |
| | **Workshop for machinery & vehicles** |
| Within village (0) | 0 |
| Within 5 km (1) | 21 |
| More than 5 km (2) | 35 |

## Table-3.46 Workshop for Machinery & Vehicles [BATCH-V]

| District | Village | Location | Households | WORKSHOP FOR MACHINERY / VEHICLES | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Access | | If Access = Yes | | | | |
| | | | | | | Who Provides | Where -Nos. of Households who have marked (*) | | | Frequency of Use |
| | | | | Yes | No | | 0 | 1 | 2 | |
| **PROJECT VILLAGE** | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | -- | N | -- | -- | -- | -- | -- |
| | Ngaibang | MR | 4 | Y | -- | -- | -- | -- | 4 | -- |
| | Lura | LR | 16 | Y | -- | -- | -- | -- | 16 | -- |
| North Garo Hills | Merongdik | UR | 9 | Y | -- | -- | -- | -- | 9 | -- |
| | Samkalak Songma | MR | 12 | Y | -- | -- | -- | -- | 12 | -- |
| | Garo Thorikakona | LR | 20 | Y | -- | -- | -- | -- | 20 | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | Y | -- | -- | -- | -- | 21 | -- |
| | Mawthabah | MR | 5 | Y | -- | -- | -- | -- | 5 | -- |
| | Langpa | LR | 5 | Y | -- | -- | -- | -- | 5 | -- |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **--** | -- | -- | -- | -- | **92** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | Y | -- | -- | -- | -- | 20 | -- |
| North Garo Hills | Rabha Thorikakona | CV | 21 | Y | -- | -- | -- | 21 | -- | -- |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | Y | -- | -- | -- | -- | 15 | -- |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **--** | -- | -- | -- | **21** | **35** | **--** |

**Notes**:

UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

## *3.19. Other Questions [Batch V]*

**Findings**

This sub-section gives discusses the other questions asked to the sampled households during the survey. These queries related to agriculture, capacity building, livestock, management and practices for both project and control villages. Tables-3.47, 3.48 and 3.49 give the findings in this regard. The analysis of the responses is furnished below.

**Analysis**

*Has Household used new technology for farming?*

As per the survey, it is found that there are no households who used new technology for farming in both project and control villages.

*Does Household practice INM, IPM & IDM?*

It is found that in both project and control village, there are none who practiced Integrated Nutrient Management (INM), Integrated Pest Management (IPM) and Integrated Disease Management (IDM).

*Awareness about Climate Change*

In project village, only some households in Merongdik and Samkalak Songma villages of North Garo Hills have received awareness on climate change.

*Any members receiving Training*

In project village, some households of Lura village of East Jaintia Hills and; Wahkaji and Mawthabah villages of South West Khasi Hills are the only areas that have received training. These trainings are conducted by resource organization or any other Government departments. No such trainings have been received by any household members in control village.

*Gone on exposure visit*

In project village, it is found that some household of Wahkaji and Mawthabah villages in South West Khasi Hills are the only villages who have responded to the question whereas there are none in control village. Exposure visit are being organized and conducted by some organization or any other Government departments as per the requirement and need of the people.

*Use of machinery (owned or hired)*

There is no use of any machinery by any household from project village. In control village, some households of Rabha Thorikakona village in North Garo Hills use machinery only for land preparation. As per the survey, it is found that the use of machinery (whether owned or hired) is not required by many household.

*Stall feeding of livestock & Fodder Cultivation*

Nil.

## Table-3.47: Other Questions [Questions 1-5] [BATCH V]

| District | Village | Location | Households | Has Household Used New Technology for Farming | | | | | | | Does household Practice | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Yes | No | If 'Yes' | | | | | Integrated Nutrient Management | | Integrated Pest Management | | Integrated Disease Management | |
| | | | | | | Who Provided Technology | Did they Demonstrate | | Does it help earn more | | | | | | | |
| | | | | | | | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | N | -- | N |
| | Ngaibang | MR | 4 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | N | -- | N |
| | Lura | LR | 16 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | N | -- | N |
| North Garo Hills | Merongdik | UR | 9 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | N | -- | N |
| | Samkalak Songma | MR | 12 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | N | -- | N |
| | Garo Thorikakona | LR | 20 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | N | -- | N |
| South West Khasi Hills | Wahkaji | UR | 21 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | N | -- | N |
| | Mawthabah | MR | 5 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | N | -- | N |
| | Langpa | LR | 5 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | N | -- | N |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | N | -- | N |
| North Garo Hills | Rabha Thorikakona | CV | 21 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | N | -- | N |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | -- | N | -- | -- | -- | -- | -- | -- | N | -- | N | -- | N |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **--** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Notes**:
UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

## Table-3.48: Other Questions [Questions 6-10] [BATCH V]

| District | Village | Location | Households | Awareness about Climate Change | | Any members received Training | | Gone on Exposure Visits | | Use of Machinery (owned or Hired) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Land Preparation | | Crop Irrigation | | Harvesting | | Threshing | |
| | | | | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | -- | N | -- | N | -- | N | -- | N | -- | N | -- | N | -- | N |
| | Ngaibang | MR | 4 | -- | N | -- | N | -- | N | -- | N | -- | N | -- | N | -- | N |
| | Lura | LR | 16 | -- | N | Y | | -- | N | -- | N | -- | N | -- | N | -- | N |
| North Garo Hills | Merongdik | UR | 9 | Y | -- | -- | N | -- | N | -- | N | -- | N | -- | N | -- | N |
| | Samkalak Songma | MR | 12 | Y | -- | -- | N | -- | N | -- | N | -- | N | -- | N | -- | N |
| | Garo Thorikakona | LR | 20 | -- | N | -- | N | -- | N | -- | N | -- | N | -- | N | -- | N |
| South West Khasi Hills | Wahkaji | UR | 21 | -- | N | Y | -- | Y | -- | -- | N | -- | N | -- | N | -- | N |
| | Mawthabah | MR | 5 | -- | N | Y | -- | Y | -- | -- | N | -- | N | -- | N | -- | N |
| | Langpa | LR | 5 | -- | N | -- | N | -- | N | -- | N | -- | N | -- | N | -- | N |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | -- | N | -- | N | -- | N | -- | N | -- | N | -- | N | -- | N |
| North Garo Hills | Rabha Thorikakona | CV | 21 | -- | N | -- | N | -- | N | Y | -- | -- | N | -- | N | -- | N |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | -- | N | -- | N | -- | N | -- | N | -- | N | -- | N | -- | N |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **--** | -- | **--** | -- | **--** | -- | **--** | **--** | **--** | **--** | **--** | **--** | **--** | **--** |

**Under Quantity of Fodder / If Fodder Cultivation is Yes:**
**n** gives the number of responses to the query
$\bar{x}$ gives the arithmetical mean of responses (i.e. the average of the quantities / areas / incomes)
**s. d**. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses] - for quantity of fodder

## Table-3.49: Other Questions [Questions 11-14] [BATCH V]

| District | Village | Location | Households | Stall Feeding of Livestock | | If Yes | | | Fodder Cultivation | | If Fodder Cultivation is Yes | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Quantity of Fodder | | | | | Area under Fodder | | Fodder Obtained | | Fodder Sold | | Income Received | |
| | | | | Yes | No | n | $\bar{x}$ | SD | Yes | No | n | $\bar{x}$ | n | $\bar{x}$ | n | $\bar{x}$ | n | $\bar{x}$ |
| **PROJECT VILLAGE** | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | -- | N | -- | -- | -- | -- | N | -- | -- | -- | -- | -- | -- | -- | -- |
| | Ngaibang | MR | 4 | -- | N | -- | -- | -- | -- | N | -- | -- | -- | -- | -- | -- | -- | -- |
| | Lura | LR | 16 | -- | N | -- | -- | -- | -- | N | -- | -- | -- | -- | -- | -- | -- | -- |
| North Garo Hills | Merongdik | UR | 9 | -- | N | -- | -- | -- | -- | N | -- | -- | -- | -- | -- | -- | -- | -- |
| | Samkalak Songma | MR | 12 | -- | N | -- | -- | -- | -- | N | -- | -- | -- | -- | -- | -- | -- | -- |
| | Garo Thorikakona | LR | 20 | -- | N | -- | -- | -- | -- | N | -- | -- | -- | -- | -- | -- | -- | -- |
| South West Khasi Hills | Wahkaji | UR | 21 | -- | N | -- | -- | -- | -- | N | -- | -- | -- | -- | -- | -- | -- | -- |
| | Mawthabah | MR | 5 | -- | N | -- | -- | -- | -- | N | -- | -- | -- | -- | -- | -- | -- | -- |
| | Langpa | LR | 5 | -- | N | -- | -- | -- | -- | N | -- | -- | -- | -- | -- | -- | -- | -- |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **CONTROL VILLAGE** | | | | | | | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | -- | N | -- | -- | -- | -- | N | -- | -- | -- | -- | -- | -- | -- | -- |
| North Garo Hills | Rabha Thorikakona | CV | 21 | -- | N | -- | -- | -- | -- | N | -- | -- | -- | -- | -- | -- | -- | -- |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | -- | N | -- | -- | -- | -- | N | -- | -- | -- | -- | -- | -- | -- | -- |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **--** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Under Quantity of Fodder / If Fodder Cultivation is Yes:**
**n** gives the number of responses to the query
$\bar{x}$ gives the arithmetical mean of responses (i.e. the average of the quantities / areas / incomes)
**s. d**. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses] - for quantity of fodder

## 3.20. Income & Expenditure [Batch V]

### Findings

This sub-section gives discusses the income and expenditure for both the project and control village. The annual household income is categorised under primary source and secondary source, and also monthly expenditure. The annual household income includes all work income of the entire household and monthly expenditure includes living expenses spent by a household in a month. It is found that in both project and control villages, all households are having income only as primary source; and monthly expenditure.

Table 3.50 gives the findings of the survey about the income and expenditure received and utilised respectively by households.

### Analysis

#### *Annual Household Income*

As per the survey, all households in both project and control villages are having only primary income as their source of income. In project village, the average of primary income is Rs. 116306.016 (approx. about Rs. 116306) whereas in control village is Rs. 123934.607 (approx. about Rs. 123935). It is also found that in both the project and control areas, the households are not having any secondary source and only depend on primary source of income. The average amount of primary income for both project and control villages are almost the same which indicate steady and reliable income received by the households annually.

#### *Monthly Expenditure*

In project village, the average of monthly expenditure is Rs. 4143.288 (approx. about Rs. 4143) whereas in control village is Rs. 4321.78 (approx. about Rs. 4322) which indicate that the average monthly expenditure of a household is about the same for both project and control villages.

## Table-3.50: Income & Expenditure [BATCH V]

| District | Village | Location | Households | Annual Household Income | | | | | | Monthly Expenditure | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Primary Source | | | Secondary Source | | | | | |
| | | | | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD | n | $\bar{x}$ | SD |
| **PROJECT VILLAGE** | | | | | | | | | | | | |
| East Jaintia Hills | Saipung | UR | 20 | 20 | 20106.1 | 157938.6 | -- | -- | -- | 20 | 4640.00 | 1638.806 |
| | Ngaibang | MR | 4 | 4 | 181515.00 | 93990.57 | -- | -- | -- | 4 | 3500.00 | 408.2483 |
| | Lura | LR | 16 | 16 | 100861.3 | 59802.13 | -- | -- | -- | 16 | 2850.00 | 1058.301 |
| North Garo Hills | Merongdik | UR | 9 | 9 | 154133.3 | 111861.00 | -- | -- | -- | 9 | 5166.667 | 2883.141 |
| | Samkalak Songma | MR | 12 | 12 | 50226.67 | 15456.62 | -- | -- | -- | 12 | 3250.00 | 500.00 |
| | Garo Thorikakona | LR | 20 | 20 | 85492.00 | 68901.56 | -- | -- | -- | 20 | 3675.00 | 1634.778 |
| South West Khasi Hills | Wahkaji | UR | 21 | 21 | 211083.81 | 160689.09 | -- | -- | -- | 21 | 4980.952 | 1499.540 |
| | Mawthabah | MR | 5 | 5 | 214275.1 | 149652.27 | -- | -- | -- | 5 | 4757.875 | 1478.533 |
| | Langpa | LR | 5 | 5 | 216083.15 | 145200.03 | -- | -- | -- | 5 | 4851.7686 | 1681.879 |
| **TOTAL / AVERAGE** | | **(PROJECT)** | **112** | **112** | **116306.016** | -- | -- | -- | -- | **112** | **4143.288** | **--** |
| **CONTROL VILLAGE** | | | | | | | | | | | | |
| East Jaintia Hills | Bam Khongsi | CV | 20 | 20 | 98223.00 | 38278.66 | -- | -- | -- | 20 | 3790.00 | 1357.978 |
| North Garo Hills | Rabha Thorikakona | CV | 21 | 21 | 107231.00 | 84877.77 | -- | -- | -- | 21 | 3920.00 | 1286.202 |
| South West Khasi Hills | Mawkhlaitngap | CV | 15 | 15 | 181601.8 | 130062.1 | -- | -- | -- | 15 | 5593.312 | 5745.651 |
| **TOTAL / AVERAGE** | | **(CONTROL)** | **56** | **56** | **123934.607** | -- | -- | -- | -- | **56** | **4321.78** | **--** |

**Notes**:

UR: Upper Reach / MR: Middle Reach / LR: Lower Reach/ CV: Control Village

**Under 'Amount Received':**

**n** gives the number of responses to the query

$\bar{x}$ gives the arithmetical mean of responses (i.e. the average of the amount received)

**s. d**. is the standard deviation of the responses received: [Standard deviation is a measure of the variation of the responses]

# 4. BENCHMARKING

In terms of implementation of IWMP, benchmarking has been defined as 'a process of setting realistic standards of watershed outcomes by assigning specific values to the indicators identified for this purpose and taking into consideration agro-ecological variation and production processes across the sectors.' The indicators and benchmarks for the IWMP have been developed and refined in 2015 with the collaboration of domain experts and practitioners from multi-disciplinary areas. Accordingly, the 'Operational Guidelines' on benchmarking of watershed management outcomes has been brought out by the DoLR in 2015. It furnishes the major ecological regions considered for benchmarking. India has been classified into eight such regions based on the factors like Physiography, slope, soil type, forest cover and availability of water resources.

Referring the said 'Operational Guidelines', a review meeting related to Benchmarking was held with the officials of SLNA-IWMP, Meghalaya on 13th February 2017 in presence of the representative officials of PIAs in Shillong. Based on the detail discussions held in the review meeting, the baseline values has been fixed for the identified indicators considering the agro-climatic zone and usefulness to the watershed projects implemented in Meghalaya.

It is against these baseline values that the achievements shall be monitored and compared against the benchmarks to assess the impacts of the interventions in the watersheds. The indicators and benchmarks so finalised are shown below;

**Table-ES.3: Benchmark Values Fixed For Meghalaya (Western & Eastern Himalayas Region)**

| Sl. No. | Indicator | Frequency/ Stages | Benchmark Values (in %) |
|---|---|---|---|
| **A.** | **Soil Health** | | |
| 1. | Soil Organic Carbon Increase | 5 Years | 5 |
| **B.** | **Hydrology** | | |
| 1. | Drinking water availability Increase | 3 Years | 15 to 20 |
| | | 5 Years | 20 to 25 |
| 2. | Status of Water Bodies | | |
| | a. Spread Area Increase | Annually | 5 to 10 |
| | b. Rejuvenation | Monthly | 10 to 20 |
| | c. New Water Bodies | Monthly | 5 to 10 |

**Table-ES.3: Benchmark Values Fixed For Meghalaya (Western & Eastern Himalayas Region)**

| Sl. No. | Indicator | Frequency/ Stages | Benchmark Values (in %) |
|---|---|---|---|
| **C.** | **Forestry** | | |
| 1. | Tree Cover Increase | 3 Years | 10 to 15 |
| | | 5 Years | 15 to 20 |
| | Survival of Planted | 3 Years | 50 |
| | | 5 Years | 70 |
| **D.** | **Agriculture and Horticulture** | | |
| 1. | Diversification in agriculture & horticulture Increase | 5 Years | 5 to 10 |
| 2. | Area covered under improved varieties/HYV of total cultivable land | 5 Years | 5 to 10 |
| 3. | Area enhanced under Irrigation as to total cultivable land | 5 Years | 5 to 10 |
| 4. | Area covered micro irrigation system Increase | 5 Years | 5 to 10 |
| 5. | Demonstration of new technology increase | 5 Years | 5 |
| 6. | Farmers aware about climate change impacts Increase | 5 Years | 15 to 20 Nos. |
| 7. | Cropping intensity viz. Shift from single to double, triple/inter cropping Increase | 5 Years | 15 to 20 |
| 8. | Fallow and wasteland reduction as percentage of total agricultural land | 5 Years | 5-15 |
| 9. | Adoption of INM/IPM/IDM | 5 Years | 10-25 |
| 10. | No. of Farmers undergoing Training | Annually | 20% HH |
| **E.** | **Animal Husbandry, Dairy and Fisheries** | | |
| 1. | Increase in Livestock Units and Population | 5 Years | 10 to 25 |
| 2. | Health Camp | Annually | 1 |
| **F.** | **Economic, Financial, Process, Assets, Institutional, Risks and Convergence** | | |
| 1. | Total Income | 3 Years | 5 to 10 |
| | | 5 Years | 10 to 15 |

**Table-ES.3: Benchmark Values Fixed For Meghalaya (Western & Eastern Himalayas Region)**

| Sl. No. | Indicator | Frequency/ Stages | Benchmark Values (in %) |
|---|---|---|---|
| 2. | Finance/Credit linkages (SHGs/UGs/CIGs) | 5 Years | 20 to 25 |
| 3. | Watershed Development Fund | 5 Years | 100% as planned |
| 4. | Common Property Resources Maintenance Mechanism | 5 Years | 60-80% as planned |
| 5. | Status of Area Treatment | 5 Years | 100% as planned in DPR |
| 6. | Status of Drainage line Treatment | 5 Years | 100% as planned in DPR |
| 7. | No. of Social Audits | 5 Years | 80% as planned under IWMP |
| 8. | No. of SHGs/CBOs/Micro Enterprise Formed | 3 Years | 50% as planned by 3rd Year |
| 9. | No. of Watershed Committee Functional | 3 Years | 100% Functional |
| 10. | Capacity Building of WC/PIAs/CBOs | 5 Years | As planned under IWMP |
| 11. | No. of common watershed assets created | 3 Years | 50% as planned under IWMP |
| | | 5 Years | 100% as planned under IWMP |
| 12. | No. of Private assets | 5 Years | 80% as planned under IWMP |
| 13. | No. of CBOs/Micro Enterprises linked to market | 5 Years | 50% as planned under IWMP |
| 14. | Convergence of Scheme | 3 Years | 60% as planned under IWMP |
| | | 5 Years | 100% as planned under IWMP |
| 15. | Technology | 3 Years | 60% as planned under IWMP |
| | | 5 Years | 100% as planned under IWMP |

# 5. CONCLUSION

The present Baseline Survey had been undertaken with the objective of obtaining field data on the baseline (pre-project) status of the project indicators chosen under IWMP for benchmarking. This Report has covered a sample of households from project villages and control villages. These villages have been chosen based on the study methodology to cover 25% of the projects implemented under Batch-V in Meghalaya.

In the present instance, the Baseline Study covered 25% of the batch-wise projects. In other words, around one-quarter of the projects taken up under Batch-V were taken up under the present exercise. The Baseline Survey had been carried out in 2016 covering four districts of the state; viz. East Jaintia Hills, North Garo Hills, South West Khasi Hills. In each district, a project was studied, with three project villages - one of these villages was located in each of the Upper Reach (UR) or ridge, Middle Reach (MR) and Lower Reach (LR) or Valley of the watershed covered under the project. In addition, one village was taken as the Control Village.

In all, the survey covered 112 households in the Project Villages and 56 in the Control Villages - totalling 168 households in all.

This Report covers the Baseline Survey and Benchmarking of the project indicators for Batch-V projects. Based on the detail discussions held in the review meeting with SLNA on 13/02/2017, the baseline values has been fixed for the identified indicators considering the agro-climatic zone and usefulness to the watershed projects implemented in Meghalaya. It is against these baseline values that the achievements shall be monitored and compared against the benchmarks to assess the impacts of the interventions in the watersheds.

## PHOTOGRAPHS OF FIELD SURVEY

| | |
|---|---|
|  |  |
| Field Survey under SWKH IWMP-IV in SWK Hills District | Field Survey under SWKH IWMP-IV in SWK Hills District |
|  |  |
| Field Survey under SWKH IWMP-IV in SWK Hills District | Field Survey under SWKH IWMP-IV in SWK Hills District |

## PHOTOGRAPHS OF FIELD SURVEY

| | |
|---|---|
|  |  |
| Field Survey under NGH IWMP-IV in North Garo Hills District | Field Survey under NGH IWMP-IV in North Garo Hills District |
|  |  |
| Field Survey under NGH IWMP-IV in North Garo Hills District | Field Survey under NGH IWMP-IV in North Garo Hills District |

## PHOTOGRAPHS OF FIELD SURVEY

Meeting with WC under EJH IWMP-I in East Jaintia Hills District

Field Survey under EJH IWMP-I in East Jaintia Hills District

Survey Location (Saipung) under East Jaintia Hills District

Meeting with Divisional Officer of East Jaintia Hills Division

# INTERESTING FACTS OBSERVED DURING FIELD SURVEY

**1. EAST KHASI HILLS DISTRICT:**

Two projects were covered for baseline survey under East Khasi Hills District. IWMP–XI of BATCH III included Mawphlang, Mawkynrew and Mawryngkneng C& RD Block. The villages selected for the survey were Rim Shylla as Upper Reach, Wah Mawlein as Middle Reach, Pepbah as Lower Reach and Sohryngkham as Control village.

Wah Mawlein under Lower Umjar project with 70 Households is one of the cleanest village in the project area. It has around **25 Community Dustbins** placed in the village road sides. The village has around **6 Public Toilets** constructed in different locations of the village area out of which 2 toilets are from the EPA structure of IWMP. Outside the Community hall of the village, a board is placed showing all records and benefits of various schemes which includes the amount received by the village from different Governmental and Non-governmental institutions. This is a good practise followed by the Village Headman in order to show transparency and smooth functioning of these schemes in the village.


**PHOTO: GOOD PRACTICES OF THE DORBAR IN WAH MAWLIEN VILLAGE**

Rim Shylla is a small and new village under Upper Umjar Micro Watershed, a total number of 32 households resides in the village out of which **15 of the households** are headed by women.

Sohryngkham is the village selected as Control village for the survey. It is a large village located in Mawryngkneng in East Khasi Hills district with total 1039 families residing. It is reputed to be the **largest village** in Asia, in terms of size and jurisdictional area. The Sohryngkham village has population of 5736 of which 2824 are males while 2912 are females as per Population Census 2011.

In Sohryngkham village, total nos. of children between the age group 0-6 is 1115. The village has higher literacy rate compared to Meghalaya. In 2011, literacy rate of Sohryngkham village was 84.44 % compared to 74.43 % of Meghalaya. In Sohryngkham, Male literacy stands at 82.31 % while female literacy rate was 86.50 %.

IWMP XIII of BATCH IV is another project selected for the base line survey. The villages selected are Wah Rymben as Upper Reach, Mawriang as Middle Reach, Umsyiem as Lower Reach and Nongshyrngan as the Control village. In most of these villages, villagers do not have their own agricultural land, they usually take lease from the landowners for their agricultural activities.

Common Measurements practised by local community are given below:

1 Mon = 40 kg.

1 Pun = 80 numbers.

1 Bhar = 32 numbers.

1 Thup = One pile of wood.

**2. EAST JAINTIA HILLS DISTRICT:**

IWMP I of BATCH V was selected for the base line survey. The villages selected are Saipung A as Upper Reach, Ngaibang as Middle Reach, Lura as Lower Reach and Bam Khosngi as Control village. These villages are about 60 km from Khliehriat, the District Headquarter; however the road condition to these villages is poor.

In Saipung village, majority of the people are Biate tribe. The **Biate people** are one of the oldest tribes of Mizoram, Assam and Meghalaya. Their language belongs to the Tibeto-Burman family. Though they are less in term of population, they have their own identity with rich, distinctive history, culture, dialect and religious heritages. They are also one of the oldest living tribes in North East India especially among the Chin-Kuki-Mizo family. They follow a Patrilineal system.

**PHOTO: SAIPUNG VILLAGE**

**PHOTO: POOR ROAD CONDITION ON THE WAY TO SAIPUNG**

Common Measurements practised by local community are given below:
1 Bhar = 64 Numbers.
1 Nong = 178.4 Meter².
1 Tin = 6 Nong.
1 Tin = 15 kg.

**3. WEST JAINTIA HILLS DISTRICT:**

IWMP VII of BATCH III- Rtiang village was selected as Upper Reach, Bear & Sarhen as Middle reach, Mukroh as Lower Reach and Laskein as Control village.

Some local measurements practised are given below:

1 Shari = 0.2 Hectare.

**4. NORTH GARO HILLS DISTRICT:**

IWMP IV of BATCH V was selected for the base line survey. The villages are Merongdik as upper Reach, Garo Thorkakona as Middle reach, Samkalak Songma as Lower Reach and Rapha Thorikakona as the Control village.

As compared to Khasi and Jaintia Hills, people in Garo Hills normally possess large homestead and agricultural land, however economic condition is relatively poor. In some parts of the plain areas, villages are prone to flood which causes damage to households, vegetations and fish ponds etc.

Common Measurements practised by local community are given below:

1 Bigha = 0.16 Hectare.

**5. SOUTH WEST KHASI HILLS DISTRICT:**

IWMP IV of BATCH was selected for the base line survey. Under this project, villages selected are Wahkaji as Upper reach, Mawthabah as Middle Reach, Langpa as Lower Reach and Mawkhlaitngap as Control village.

It has been observed that in most of the village under the projects, undesirable practices like cutting trees and burning them to produce charcoal (**wood carbonisation**) for livelihood is followed. Hence, work related to IWMP activities like Natural Resources Management including afforestation, conservation and regeneration of resources etc are affected. People can always look for better livelihood options. Most of the land areas in the project are found to be barren and uncultivable.

Road conditions to the project area are very poor with no proper mobile network and electricity.

**PHOTO: DEFORESTATION IN SOUTH WEST KHASI HILLS**

**PHOTO: WOOD CARBONISATION AND LIVELIHOOD ACTIVITY IN SOUTH WEST KHASI HILLS**

**6. RI BHOI DISTRICT:**

The Base Line Survey of NEDFi started in Ri- Bhoi District, IWMP- VIII, BATCH –IV which falls under Umsning-Umling C& RD Block. The Villages selected for the survey was Plasha as Upper Reach, Kynton Phanram as Middle Reach, Umshit as Lower Reach and Himphala & Tomonpoanglong as Control village. These villages are approximately 27 km from Nongpoh, the District Headquarters. Most of the people in the surveyed area are from the **Mikir** Tribe. One can witness some of Mikir tribal community in different districts of the Assam valley. Apart from residing in different places of Assam, Mikir tribal community are found in other places of India like Meghalaya and Nagaland.

Common Measurements practised by local community are given below:

1 Kani = 1 Bag (60 kg).

1 Dang = 35*35 Pruh (1 Pruh = 18 inch).

25 Dang = 1 Hectare.

XXXXXXXXXXXXXXXXXXXXXXXXXXXX

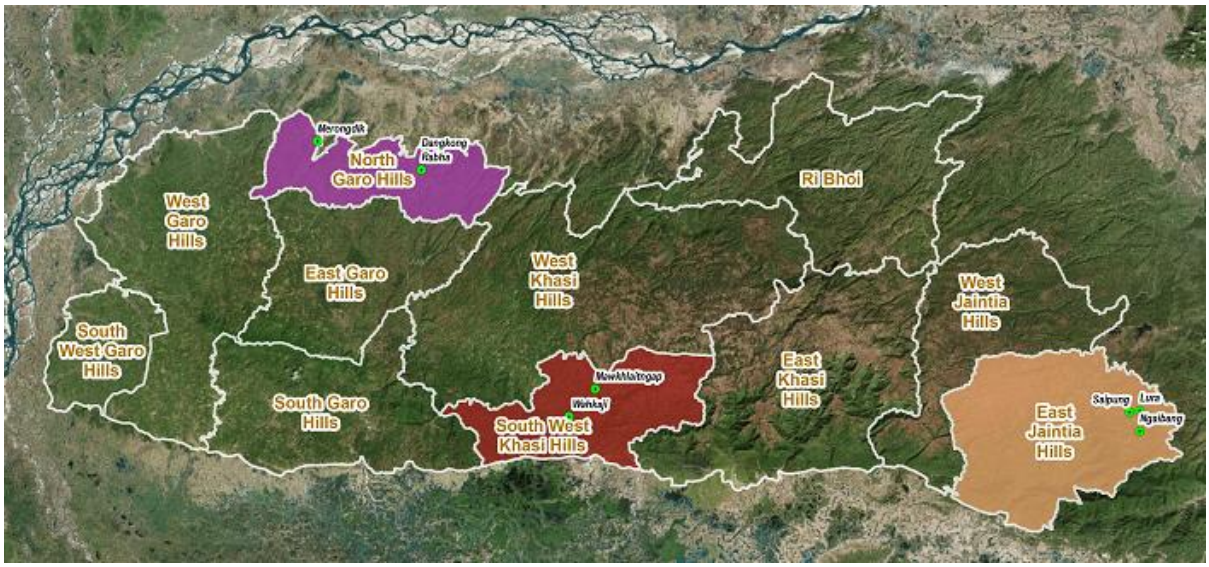
**Report on Baseline Survey & Benchmarking**

**BATCH-V**

# LIST OF APPENDICES

# Appendix-1

## Map of Meghalaya showing the Village Locations



# Appendix-2

## Village Schedule

**[Attached in the next few pages]**

**Integrated Watershed Management Programme**
**BASELINE STUDY & BENCHMARKING UNDER MEL&D**

**S-V**

# SURVEY SCHEDULE - VILLAGE

**Note:** Data is being collected through this Schedule as required for the above Government of India funded Integrated Watershed Management Programme, which is being implemented by the State Level Nodal Agency – IWMP (Meghalaya)

| | | |
|---|---|---|
| **(A)** | **VILLAGE DETAILS** | |
| | Name of Village: | Revenue Circle: |
| | IWMP Project / Watershed: | Development Block: |
| | Micro-watershed: | District: |
| **(B)** | **AREA & POPULATION DETAILS** | |

**Area**

Area of Village: _____ Ha [1 Bigha = 0.13378 Hectare (Ha)]

Area as per Land Classification

| Classification of Land | Area (Ha) | Remarks |
|---|---|---|
| Forest | | Incl. private forests |
| Area under Non-Agricultural Use | | Incl. all lands occupied by buildings, roads & railways or under water, e.g. rivers & canals and other lands put to uses other than agriculture |
| Barren and Un-culturable Land | | Land which cannot be brought under cultivation except at an exorbitant cost |
| Permanent Pastures and other Grazing Lands | | Incl. village common grazing land |
| Land under Miscellaneous Tree Crops, etc. | | Incl. all cultivable land which is not included in 'Net area sown' but is put to some agricultural uses. Lands under *Casurina* trees, thatching grasses, bamboo bushes and other groves for fuel, etc. which are not included under 'Orchards' |
| Culturable Waste Land | | Lands available for cultivation, whether not taken up for cultivation or taken up for cultivation once but not cultivated during the current year and the last five years or more in succession for one reason or other. |
| Fallow Lands other than Current Fallows | | includes all lands, which were taken up for cultivation but are temporarily out of cultivation for a period of not less than one year and not more than five years |
| Current Fallows: | | This represents cropped area, which are kept fallow during the current year |
| Net area Sown | | This represents the total area sown with crops and orchards |

No. of Water Bodies _____ Area under Water bodies _____ (Ha)

Area under Marshes / Seasonal Swamps: _____ (Ha)

Area susceptible to erosion _____ (Ha)

**Households & Population**

Households

| Scheduled Caste | Scheduled Tribe | Other Backward Class | General | TOTAL |
|---|---|---|---|---|
| | | | | |

Households (Continued)

No. of Landless Households (Households without Farm Land):

No. of Households without Adult male members:

No. of Households with BPL Cards:

Main Avenues of Employment

(a)

(b)

(c)

(d)

Population of Village

| Male | Female | Total | Children (0-6) | No. of persons migrated [Past Five Years] | |
|---|---|---|---|---|---|
| | | | | Permanently | Seasonally |
| | | | | | |

**(C) PROVISION OF AMENITIES**

1. Does the village have the following amenities:
   (a) Electricity Supply: Yes / No [If 'Yes', Nos. of Electrified Households _____ ]
   (b) Rural Piped Water Supply : Yes / No [If 'Yes', Nos. of Households Connected _____ ]
   (c) Black-topped Access Road: Yes / No [If 'No', is village connected by metalled road? Yes / No]
   (d) Lower Primary School: Yes / No [If 'No', distance to nearest Lower Primary School ____ km]
   (e) Anganwadi Kendra: Yes / No: If 'Yes', please mention the number ____
2. Distance in Km to nearest

| Post Office | Bank | Community Hospital (30 bedded) | High School | College | Veterinary Centre | Daily Bazar | Weekly Bazar |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

3. Main Sources of Drinking Water: _____
4. Main Sources of Fuel for Cooking: _____
5. Main Sources of Fodder for Cattle _____

**(D) COMMON PROPERTY RESOURCES**

Details of Common Property Resources [Please use separate sheet if necessary]

| Particulars | Nature of Right | Months Used in the Year | Nos. of HH Benefitted | User Charges |
|---|---|---|---|---|
| Grazing Reserve / Ground | | | | |
| Water bodies | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | Forest (source of NTFP) | | | | |
| | Other | | | | |
| | | | | | |
| | | | | | |

**(E) SOIL, WATER & VEGETATION RELATED**

1. Depth of Water Table (metres below ground level)

| Month → | February-March | June-July | September - October |
|---|---|---|---|
| Depth (metres below ground level) → | | | |

2. Observed instances of Soil Erosion/ Landslide
   a.
   b.
   c.
   d.
3. Details of Areas under Forest / Groves in Village (in Ha, Type of Forest / Grove etc.)
4. Average Annual Rainfall _____ (in mm) Any Change in Rainfall Pattern in last 3-5 years_____
5. Water Availability in the Streams – (i) Perennial (ii) Seasonal - Up to which Month.._____
6. Floods: YES / NO. If 'Yes'
   Duration _____ Frequency _____ per year and Extent of Damage_____.
7. Period of shortage of Water, if any _____
8. Reasons for Crop Failure if any._____.
9. Soil Organic Carbon _____
10. Any other point about Soil & Water Resources:

**(F) VILLAGE LEVEL INSTITUTIONS (NON-POLITICAL / NON-RELIGIOUS)**

Details of Village Level Institutions (excludes Political & Religious Institutions)

| Name of Institution | Year of Formation | No. of Members | Main Activities |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**(G) DETAILS OF VILLAGE MICRO-ENTERPRISES (INCL. SELF HELP GROUPS)**

As follows.

| | Type | Number of Units |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

**(H) DETAILS OF GOVERNMENT SCHEMES**

Details of Government Schemes implemented / on-going in the village (Last 5 Years)

| Name of Scheme | Department | Year Started & Finished | Nos. of HH Benefited |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Signature of Respondent

Name:

Designation:

Mobile No:

Signature of Data Collector

Name:

# Appendix-3

# Household Schedule

**[Attached in the next few pages]**

**Integrated Watershed Management Programme**
**BASELINE STUDY & BENCHMARKING UNDER MEL&D**

**S-H**

# SURVEY SCHEDULE - HOUSEHOLD

**Note:** Data is being collected through this Schedule as required for the above Government of India funded Integrated Watershed Management Programme, which is being implemented by the State Level Nodal Agency – IWMP (Meghalaya)

**(A) LOCATION**

| | |
|---|---|
| 1. Name of IWMP Project: | 2. Name of Watershed: |
| 3. Micro-watershed: | 4. Village: |
| 5. Hamlet/Locality: | 7 Revenue Circle: |
| 6. Position of Habitation in the Watershed: Upper Reach / Middle Reach / Lower Reach | 8. Block:<br>9. District: |

**(B) HOUSEHOLD & LAND DETAILS**

1. Name of Respondent:

2. Relationship to Head of Household: 3. Social Category: SC/ST/OBC/GEN

4. Details of Household Members including Respondent (Head of Household to be listed first)

| Name | Age | Male / Female | Education | Occupation | | Whether member of SHG / UG/ Village Dorbar |
|---|---|---|---|---|---|---|
| | | | | Primary | Secondary | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

If the above table is insufficient, details of additional members may recorded separately using the above format

5. Details of Land & Operational Holdings

Homestead Land: _____ (in Ha) [1 Bigha = 0.13378 Hectare (Ha)]

Operational Holdings

| Classification | Owned + Utilized by Self | | Other Utilized | | Total Area (in Ha) |
|---|---|---|---|---|---|
| | No. of Plots | Area (in Ha) | No. of Plots | Area (in Ha) | |
| Cropped | | | | | |
| (i) Irrigated | | | | | |
| (ii) Non-Irrigated | | | | | |
| Fallow Land | | | | | |
| Other | | | | | |

Leased Out Land Area (in Ha): _____

Distribution of Land & Operational Holdings in Micro-watershed [All figures in Ha]

| | Upper Reach | Middle Reach | Lower Reach | Total |
|---|---|---|---|---|
| Owned + Self Utilized | | | | |
| Other Utilized | | | | |
| Leased out | | | | |

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6. Soil Health

| Has your soil ever been tested (Y/N) | Name of Soil Testing Agency | Cost of Soil Testing (Rs.) | Status of Organic Carbon |
|---|---|---|---|
| | | | |

**(C) IRRIGATION**

1. Irrigated Area & Sources (Area in Ha)

| Season | UPPER REACH | | MIDDLE REACH | | LOWER REACH | | Total Irrigated Area |
|---|---|---|---|---|---|---|---|
| | Area | Source | Area | Source | Area | Source | |
| PRE-KHARIF | | | | | | | |
| KHARIF | | | | | | | |
| RABI | | | | | | | |

2. Information on Irrigation Sources – Number of Sources

| Source of Irrigation | Nature of Source | No. of Sources | | |
|---|---|---|---|---|
| | | UPPER REACH (UR) | MIDDLE REACH (MR) | LOWER REACH (LR) |
| Well (incl. Shallow Tube Well) | Perennial | | | |
| | Seasonal | | | |
| Pond | Perennial | | | |
| | Seasonal | | | |
| River | Perennial | | | |
| | Seasonal | | | |
| Spring | Perennial | | | |
| | Seasonal | | | |
| Other Specify: _____ | Perennial | | | |
| | Seasonal | | | |

3. Water Availability (For **Seasonal Sources** ONLY)

| Source of Irrigation | Water Availability in the Indicated Month ('YES' where applicable) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | February-March | | | June-July | | | September-October | | |
| | UR | MR | LR | UR | MR | LR | UR | MR | LR |
| Well (incl. Shallow Tube Well) | | | | | | | | | |
| Pond | | | | | | | | | |
| River | | | | | | | | | |
| Spring | | | | | | | | | |
| Other [Specify: _____] | | | | | | | | | |

**(D) DRINKING WATER**

1. Information about Drinking Water Sources [Months of Scarcity _____]

| Month | Source(s) of Water | Distance from Residence (metres) | Time Spent in Fetching Water (min) |
|---|---|---|---|
| February-March | | | |
| June-July | | | |
| September-October | | | |

**(E) COOKING FUEL**

Source of Cooking Fuel

| Type | Source | Distance from Home (km) | Purchased / Collected | Quantity Used per Month | Rate (in Rs.) per Unit |
|---|---|---|---|---|---|
| Firewood | | | | | |
| Dried Cow dung | | | | | |
| Other Biomass | | | | | |
| Kerosene | | | | | |
| LPG | | | | | |
| Other _____ | | | | | |

**(F) CROPS GROWN**

Details of Crops, Production & Income [Income is the Income per crop per year after harvest net of all Expenses]

(A) Under Irrigated Conditions

| Crop | Growing Season | | Area (Ha) | Area under HYV (Ha) | Avg. Yield (Kg / Ha) | Income (Rs. / Ha) |
|---|---|---|---|---|---|---|
| | From | To | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

(B) Under Non-Irrigated Conditions

| Crop | Growing Season | | Area (Ha) | Area under HYV (Ha) | Avg. Yield (Kg / Ha) | Income (Rs. / Ha) |
|---|---|---|---|---|---|---|
| | From | To | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

If the above table is insufficient, details of additional crops may be recorded separately using the above format

**(G) ORCHARD, PLANTATION CROPS & AGRO-FORESTRY**

Details of Fruit & Nut bearing Trees [Income is the Annual Income net of all Expenses]

| Type of Plant | Area Covered (in Ha) | No. of Trees | Year Started | Output (with Unit) | Income (Rs.) |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

**(H) LIVESTOCK**

Details of Ownership of Livestock [Income is the Annual Income net of all Expenses, Unit of Output to be given]

| Particulars | Nos. Owned | Output (Milk/Wool/Meat/Egg) | Income (Rs.) |
|---|---|---|---|
| Cattle | | | |
| Buffaloes | | | |
| Goats | | | |
| Pigs | | | |
| Poultry | | | |
| Others | | | |

**(I) FISHERY**

Details of Fishery Operations [Income is the Annual Income net of all Expenses]

Area under Fishery _____ (Ha)

| Type of Water Body & Size | Types of Fish | Period of Culture | | Output (Kg) | Income (Rs.) |
|---|---|---|---|---|---|
| | | From | To | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

**(J) NON TIMBER FOREST PRODUCT (NTFP)**

NTFP Output

| Type of NTFP | Quantity Collected | Quantity Sold | Income from Sale (Rs.) |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**(K) WAGE LABOUR**

Receipts from Wage Labour

| **Source** | **Days worked / Year** | **Main Months of Work** | **Rate (Rs. / Day)** | **Amount Received (Rs.)** |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

**(L) MIGRATION**

1. Any member of the household migrated outside? Yes / No (Pls. omit Married Persons Shifted)
   If Yes: please answer the following questions (2-9)
2. Nos. of Members Migrated: Male _____ Female _____
3. Nos. permanently Migrated: Male _____ Female _____
4. Reasons for Migration: Work (Pls. specify work done _____ ) / Study / Other _____
5. Destination(s):
6. Is migration seasonal or permanent:
7. In case seasonal, then the months of stay outside the household per year _____
8. Does the household receive any payment from the migrated persons? Yes / No
9. If 'Yes' to (8), then the amount received: Rs. _____ per year
10. Any members planning to migrate? Yes / No
11. If 'Yes' to (10) details:
    Nos. intending to migrate:

| | |
|---|---|
| | Reasons: Unemployment[ ] Food Shortage[ ] Water Scarcity [ ] Security / Safety [ ]Education [ ] |
| **(M)** | **INCOME** |
| | Sources & Quantum |

| Source | Income Received (Yes / No) | (If Yes) Income Per Year (Rs.) |
|---|---|---|
| Agriculture Crops | | |
| Orchard / Plantation Crops | | |
| Livestock | | |
| Fishery | | |
| Non Timber Forest Produce | | |
| Wage Labour | | |
| Remittance from Migration | | |
| Other (1) _____ | | |
| (2) _____ | | |
| (3) _____ | | |

| | |
|---|---|
| **(N)** | **ASSETS** |
| | Possession of Assets by Type<br>**1. House** Yes / No –<br>If (1) is 'Yes', please answer (2-4)<br>**2. Type of House**: Kutcha / Semi Pucca / Pucca<br>**3. Sanitary Toilet:** Yes / No<br>**4. (a) Electric Connection to House:** Yes / No **(b) Availability of Solar Devices for Light:** Yes / No<br>**5. Radio**: Yes / No<br>**6. Television**: Yes / No<br>**7. Mobile Connection**: Yes / No [If 'Yes', no. of active connections in the household_____]<br>**8. Bicycle:** Yes / No<br>**9. Two Wheeler**: Yes / No<br>**10. Other Vehicle**: Yes / No [If 'Yes', pls. specify type(s) _____] |
| **(O)** | **GOVERNMENT ENTITLEMENTS** |
| | 1. Have you/ your household got NREGS Job Card? Yes / No<br>2. If 'Yes', no. of days worked _____ no. of days paid for _____<br>3. Ration Card: Yes / No<br>4. If 'Yes'; items purchased regularly & Quantity per year<br>a. _____<br>b. _____<br>c. _____<br>5. BPL Card: Yes / No<br>6. Any other Govt. facility: Yes / No<br>7. If 'Yes' to (6), details _____ |
| **(P)** | **SAVING & CREDIT** |
| | Saving<br>1. Amount Saved: Rs. _____<br>2. Where Saved: Bank _____ / Post Office / SHG _____ / Other _____<br>Credit<br>1. Amount Borrowed: Rs. _____ Interest Rate _____ per annum |

2. Where taken: Bank _____ / Micro-Finance _____/ SHG _____ / Other [Pls. indicate source _____]

**(Q) SOCIAL CAPITAL**

Participation in the following

| Type of Organization | Yes / No | If 'Yes', details |
|---|---|---|
| Self Help Group | | |
| User Group | | |
| Farmer Producer Institution | | |
| Any other Organization (non-political) | | |

Self Sufficiency

| Particulars | Round the year | 9-11 months | 6-9 months | 3-6 months | Below 3 months |
|---|---|---|---|---|---|
| Food | | | | | |
| Fodder | | | | | |
| Fuel | | | | | |
| Drinking water | | | | | |
| Employment | | | | | |

**(R) ACCESS TO SERVICES [**under 'Where Provided': '0' for 'within village'; '1' for 'within 5 km'; '2' for 'more than 5 km]

Do you / your household have access to the following services:

| Service | Yes / No | If 'Yes' | | |
|---|---|---|---|---|
| | | Who Provides | Where Provided | Frequency of Use |
| AGRICULTURAL EXTENSION SERVICES | | | | |
| EDUCATION | | | | |
| HEALTH | | | | |
| VETERINARY SERVICES | | | | |
| • Health Camp | | | | |
| • Artificial Insemination Services | | | | |
| CREDIT FACILITY | | | | |
| FARM INPUTS | | | | |
| • HYV Seeds | | | | |
| • Fertilizers | | | | |
| • Pesticides | | | | |
| • Weedicides | | | | |
| • Diesel | | | | |
| MARKET FOR FARM PRODUCE | Yes/No | Where Sold | Location of Market | Remark when Sold |
| • Crops | | | | |
| • Orchard Output | | | | |
| • Livestock | | | | |

| | | | | | |
|---|---|---|---|---|---|
| • Fishery | | | | | |
| • Non Timber Forest Produce (NTFP) | | | | | |

| Service | Yes / No | If 'Yes' | | |
|---|---|---|---|---|
| | | Who Provides | Where Provided | Frequency of Use |
| MOBILE CONNECTIVITY | | | | |
| ATM & BANK | | | | |
| WORKSHOP FOR MACHINERY / VEHICLES | | | | |

**(S) OTHER QUESTIONS**

1. Has your household used new technology for farming? Yes / No. If 'Yes' please answer (2) - (4), else go to (5)
2. Who provided the technology?
3. Did they demonstrate the technology in the village or nearby? Yes / No
4. Did it help your household to earn more?
5. Does your household practice:
   Integrated Nutrient Management (INM)
   Integrated Pest Management (IPM)
   Integrated Disease Management (IDM)
6. Are you aware of climate change? Yes / No. If 'Yes', please tell us what it means _____
   _____
7. Have you or any of your household members received any training? Yes / No
8. If 'Yes', details _____ _____
   _____
9. Have you or household members gone for any exposure visits (on improved farming practices)? Yes / No
   If 'Yes', places visited and under whom:
   (a)
   (b)
   (c)
10. Use of machinery (own or hired) & type (like Tractor, Power Tiller, Combine, Rotavator, Shallow Tube Well etc.):
    Land Preparation
    Irrigation of Crop
    Harvesting
    Threshing of Crop
11. Do you carry out stall-feeding of livestock? Yes / No
12. If 'Yes', details like quantity of fodder used, nos. and types of animals fed etc.:
    (a)
    (b)
13. Do you undertake fodder cultivation? Yes / No [If 'No', sources of fodder _____]
14. If 'Yes':
    Type of Fodder Cultivated & Area under Cultivation (in Ha)
    Fodder obtained (Kg/Year) _____
    Fodder sold, if any (Kg/Year) _____ Income received: Rs./Year. _____

**(T) INCOME & EXPENDITURE**

Annual Household Income (in Rs.)

| Primary Source | Secondary Source |
|---|---|
| | |

Monthly Expenditure (in Rs.)

**Signature of Respondent**
**Mobile No:**

**Signature of Data Collector**
**Name:**