Smallholder Agribusiness
Partnerships Programme (SAPP)

Annual Outcome Survey of 4P Project; Improvement of Production and Quality of Pepper with channeled marketing and Processing for Improving Income of Pepper Growers

FINAL REPORT

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Executive Summary

The New Rattota Cooperative Society has initiated a project for improving income of 2500 beneficiaries, who are pepper growers as well as members of the society, living within Rattota and Ambangangakorale Divisional Secretariat (DS) divisions through improving marketing linkages and processing. The farmers having 300-1200 bearing pepper vines have been selected as beneficiaries of the project. The overall purpose of this survey is to assess the progress achieved against the project interventions and provide quantitative and qualitative interpretations on specific indicators as reflected in the project M & E frame work and provide suggestions to the programme to improve project's support to achieve targeted outcomes during the project implementation period.

Direct observations of farmers' fields, proposed construction sites and collecting centers, interview of key persons, focus group discussions with selected stakeholders and mainly a sample survey of beneficiary farmers were the methodology adopted for this annual outcome survey. In Rattota and Ambangangakorale DS divisions 358 beneficiary farmers and 36 non beneficiary farmers were interviewed using a structured questionnaire.

The study reveals that the project consists of a large number of female beneficiaries and the project staff also consists of large number of women. All the staff of the Rattota MPCS – the project executor- are women excluding the Chairman of Rattota MPCS. It was observed that the enthusiasm and commitment of the project staff in order to achieve project objectives are remarkable.

Although the Rattota MPCS launched the project with huge enthusiasm in the year 2020, unexpected Covid-19 pandemic and consequent economic crisis has delayed the project activities except organizing beneficiaries and distribution of equipment and tools among the beneficiaries. The construction of processing center at Ambagasdowa, and construction of two collecting center out of three have been partially completed. Training of beneficiary farmers on agronomic aspects has been considerably completed. Purchasing of equipment for the processing centers is also partially completed.

However, due to increased prices of machineries and building materials, the project could not purchase the planned number of equipment and could not complete proposed constructions in time. Therefore, the project could not initiate the purchasing of green berries and processing centers for processing and branding. The equipment already purchased (Threshers, Grinders, Shifters, Scales…etc) are idling at Ambagasdowa stores as constructions of processing center and collecting centers are not completed.

The household survey of beneficiary families revealed that the average monthly income of a family LKR 52911.59 of which main income source is the salary (34%) followed by agricultural income (30%). Monthly average expenditure of a family is LKR 42365.00 mainly goes for food expenditure (60%). The household asset index (HHAI) was estimated as 42.995% which was an increment of 5.2% compared to the baseline.

The average holding size of the sample was 0.493 ha (1.22ac). Average number of vines per acre is 621 (1702 vines per hectare. Average yield per vine is remained at 2.11kg. The average yield per acre was estimated as 707kg of fresh berries (1746 kg/ha). The average yield in the baseline was recorded as 554 kg/ha and the increment is about 1192kg of fresh berries per hectare. (482kg/ac)

The average cost of production of fresh berries was estimated as 115.90 excluding the family labour. As the baseline figure was 125.57LKR per kg in the baseline, the cost of production has been reduced by 7.7% as a result of increasing use of family labour with the given inputs of the project.

Following are the main findings pertinent to the goal, output and outcome indicators.

Goal Indicators		
1	Percentage Change in HHAI	Baseline 37.81, AOS 42.9954, Difference = +5.2, (13.71%)
2	Percentage of HH with improvement in assets ownership (asset index)	57 farmers (16%) (Roof 25, Floor 18, Walls 31, Sanitary 9)
3	Total number of HH receiving project service in sample by gender	Male – 194 (54.2%) Female -164 (45.8%)
4	Percentage of supported HH reporting an increase in monthly income by 20% or more than by total and gender	Female 47% (Some increment 63.4%) Male 44% (Some increment 55.7%) Overall 45% (Some increment 59.2%)
5	Percentage of increasing average monthly income	Baseline LKR 38681.00 AOS LKR 52912.00 Change LKR 14231 (36.8%)
6	Percentage of increasing average monthly income from pepper cultivation	Baseline: 92400.00/12 = 7700.00 AOS: 271424.37/12 = 22618.00 Percentage change (193.7%)
7	Percentage of household (HH) reporting an increase in income from pepper cultivation (in the sample)	63% (The increment is mainly due to increment of prices)
Outcome Indicators		
1	Average yield of pepper (Kg/vein /year or kg/ha/ year	707 kg/ac of fresh berries (1147 kg/ha) 2.11 kg/vine
2	Percentage increase in average yield of pepper (kg/vein/year or kg/ha/year	Baseline: 554kg/ha (224kg/ac) AOS: 1147 kg/ha Change: 107% Average yield per vine 2.11kg at AOS. (Male famers 2.46kg and female farmers 1.72kg) (Baseline value is not available.)
3	Percentage of HH reporting an increased average yield	85% of the sample farmers
4	Percentage increase in average	Average production of mature berries per

	production of pepper of HH	farmer – 258kg, Average production of light berries per farmer- 13kg, Average production of dried pepper par farmer- 50kg. Baseline: Not available
5	Percentage of HH reporting an increase in average production	16% (57 Farmers)
6	Percentage decrease in cost of cultivation of pepper (Rs/ha) (Annual expenditure)	Baseline: LKR 69433/ha AOS: LKR 59618/ha Change: – 14.1%
7	Percentage of HH reporting in decline of COC in pepper cultivation	47% (147 farmers)
8	Percentage of HH who sell their product to society/ collection center	0%, The Rattota MPCS has not purchased pepper in the last year.
9	Percentage of HH reporting absence of marketing issues for pepper	13%, (Almost all the farmers have problems in marketing as the Rattota MPCS is not involved in purchasing)
10	Percentage of HH reporting that they follow the correct harvesting and hygienic processing introduced by project	Use of hygienic bags: 25% Mature harvesting at correct time: 89%
Output Indicators		
1	Percentage of HH who are involving in cultivation of pepper	100%
2	Average cultivated extend of pepper (ac)	1.22 ac (0.49ha) per farmer
3	Percentage of HH who are practicing the agronomic practices introduced by SAPP project	Pruning of shade trees: 72.3% Mulching: 31%
4	Percentage of HH reporting that their entrepreneur skill improved	51% of the farmers have been trained.
5	Percentage of HH who received the tool and machinery provided by SAPP project by item wise	Pruning knife 100% Ladder 100% Bush cutter 100%
6	Percentage of HH who received the credit provided by SAPP project	0% (No credit programme)
7	Percentage of HH who participated in the training program indicated proposal by training program	Agronomic practices: 74% Harvesting 63% Entrepreneurship: 51%
8	Percentage of HH who reported that training program are useful by program	Agronomic practices – 83% Harvesting -74% Entrepreneurship -62%
9	Have proposed processing center in proposal been established	Basic constructions have been completed of two centers. One has not been initiated.

10	Have machinery been purchased for processing center	.Following machineries and equipment have been purchased. Moisture meter 01, Pepper threshers 03, Grinder 01, Shifter 01, Vibration screen 01, Band sealer 01, Large scales 03, Small scales 03, Bag sewing machine 01, Vacuum sealer 01.
11	Has processing centers commenced the processing	No. Only basic construction of building has been completed. Plastering and finishing to be completed.
12	Has cooperative stated the production of Brand Rattota pepper as per proposal	Not initiated.

Out of the beneficiaries, the majority are (90%<) are happy about the equipment, project staff and the social relationships. However, they are unsatisfied about the training in entrepreneurship, prices, and developments in the collecting centers and marketing aspects.

The participation of women and youth in agricultural activities has been significantly increased due to project interventions. Women empowerment and development of social relations and social networks in the community are additional benefits of the project.

Marketing issues, unstable prices, difficulties in processing and drying, water scarcity are the dominant issue faced by the farmers. It was revealed that the spillover effect of the project is significant as the equipment given to the beneficiaries and the knowledge on cultural practices are shared by the beneficiaries with non-beneficiaries in many areas. However, some of the farmers are not using the bush cutters in weeding and still idling. Therefore, it is worth to find measures to redistribute the facilities in order to maximize the use of equipment given to individual farmers.

The construction work has been delayed due to price changes with the economic crisis. The estimated amount of constructions is not sufficient to complete buildings due to substantial increase of prices of building materials.

It is recommended to reduce number of collecting centers from 3 to 2 and reallocate the funds to complete the partially completed two collecting centers. Also the machineries purchased are abandoned, it is crucial to find alternatives to complete the processing center and to initiate the purchasing and processing at the earliest possibility.

The intervention is highly relevant to the area. Also the project proponent, staff of the Rattota MPCS is very enthusiastic in implementation of the project. However, delays of establishment of collecting centers and processing center have discouraged both the beneficiaries and the project proponent.

There are several organized buyers in the area are collecting pepper in the harvesting season. Therefore, a well organzed collecting mechanism should be established in order to collect sufficient amount of fresh berries in the harvesting season to achive the objectives of the project.

1 Background of the Annual Outcome Survey

The Smallholder Agribusiness Partnership Programme (SAPP) implemented by the Ministry of Agriculture with the financial assistance of the International Fund for Agricultural Development (IFAD) aims to facilitate rural smallholder farmers in terms of building commercial partnerships, providing access to finance, improving technical know-how and financial literacy, introducing mechanization to agriculture, and sustainable agricultural practices. The Public Private Producer Partnerships (4Ps) value chain model which brings public sector, rural smallholder farmers and private sector to a common platform where all partners can develop agribusiness towards a common goal by uplifting the rural farmer communities economically and socially is the key driver of this concept. Under this concept, the Smallholder Agribusiness Development Programme has been designed to contribute Sri Lanka's smallholders' poverty reduction and competitiveness. Its primary objective is to sustainably increase household income and quality of family diet by establishing confirmed market for rural producers under Public Private Producer Partnership (4P) mechanism. The 4Ps involve cooperation between a government, business agents and small-scale producers, who agree to work together to reach a common goal or carry out a specific task while jointly assuming risks and responsibilities, and sharing benefits, resources and competencies.

The programme will have national coverage, through special attention and preference will be given to low-income districts and areas where agri-production potential is high. The programme is demand-driven and the willingness and the equal commitment of programme partners (Rural farmers, Agribusiness companies, Banks, Insurance providers etc) are highly valued in reaching programme objectives. More emphasis will be put forward in selecting Producer/Farmer Organizations (POs /FOs) under SAPP to be in line with Government's policy and development agenda, and to ensure sustainability of supported Producer/Farmer Organizations within 4P mechanism. A group of 57,500 poor rural households with the potential to become active economic players under commercially-oriented production and marketing systems with diverse array of value 39 chains will be assisted through different 4P projects under the programme.

The SAPP has considered outcome monitoring as one of the important Monitoring and Evaluation (M&E) activities to assess the outcomes of the project and review the approaches both quantitatively and qualitatively. Therefore, the programme has planned to carry out the outcome survey on annual basis in all 4p projects with the aim to assess the progress at outputs and outcomes against the project interventions during the project period. The project also foresee that the outcome survey results will further guide the project to review the implementation strategy and revisit if needed to achieve the expected output and outcome.

The overall purpose of this survey is to assess the progress achieved against the project interventions and provide quantitative and qualitative interpretations on specific indicators as reflected in the project M & E frame work and provide suggestions to the programme to improve project's support to achieve targeted outcomes during the project implementation period.

More specifically, the survey needs to achieve the following objectives:

- To measure the positive and/or negative changes/outcomes taking place on relevant indicators at the household/farmer organization /agribusiness level:
- To measure the significant changes of the function of pepper value chain: value chain development, inclusive business, gender and social inclusion, partnership in business (Productivity, production and processing), access to inputs/information/technology/infrastructure etc in line with in project proposal
- To provide timely performance information so that corrective actions may be taken to implement the project activities, if required;
- To provide early evidence of project success or failure; and
- To provide the opinions on the achievements as felt by the direct beneficiaries of the project The project indicators.

2 Matale Pepper 4P Project

The New Rattota Cooperative Society have initiated a program for improving income of 2500 beneficiaries, who are pepper farmers as well as members of the society, living within Rattota and Ambangangakorale Divisional Secretariat (DS) divisions through improving marketing linkages and processing. The farmers having 300-1200 bearing pepper vines have been selected as beneficiaries of the project.

The objectives of the project are to increase the existing yield level by two-fold (from 2.5-5.0kg/vine/year), adoption of timely harvesting practices, collection and hygienic processing at three primary processing centers which are to be established at Kumbaloluwa, Pussellamudune and Weragama and sell directly to the predetermined processor/ exporter (Worldwide Commodities) on ready cash debit to the individual accounts of the growers.

Out of raw berries collected, 5% will be processed at the processing center, run by the cooperative society, into powder and sold via outlets of the Cooperative Department with a brand name of “Ratota Pepper”.

Entrepreneur skills of both pepper growers and the Director Board of the cooperative society are also to be improved to manage the business.

The following outcomes are expected with the involvement of the SAPP. The income derived from the pepper is doubled and sustained without much fluctuation of price. Growers refrain from indiscriminate harvesting and stick to correct harvesting and hygienic processing. Linkages with Worldwide commodities for marketing of green pepper for processing . Create a brand ‘Rattota pepper’ aiming at high-end markets.

Women participation of the pepper industry will be improved and better environmental practices are adopted.

The proposed total investment of the partnership project is Rs. 292.4 million of which Rs. 271.1 million for the 2,500 farmers for on farm development and the balance Rs. 21.3 million for the corporative to commence pepper collection, process, and marketing. The SAPP grant will be Rs. 91.5 million and SAPP loan is Rs. 9.3 million. The expected annual yield from the selected 2,500 farmers is around 5,425MT. of which 95% will be sold as Green Pepper berries and balance 5% will be dried and sold in the forms of Pepper powder and dried pepper.

2.1 Objectives of the project

i. Increase the existing pepper yield by two-fold of 2500 pepper growers by practicing appropriate agronomic practices from 2.5 kg/ bush to 5 kg/bush
ii. Adopting proper and timely harvesting methods to yield quality and hygienic produce of pepper
iii. Improvement of hygienic processing of pepper harvest at three multi-locational primary processing centers (Pussellamuduna, Kumbaloluwa and Weragama)
iv. Introduction of tools and machineries to reduce labor cost and efficient growing and harvesting of pepper
v. Establishing local collection network and directly supply of unprocessed raw material to a processor for steady mark

vi. Improvement of entrepreneur skills of pepper growers and cooperative
vii. Construction and provision of machineries for a secondary processing center at Rattota
viii. Obtaining fair-trade certificates and organic certificates for pepper farmers

2.2 Proposed activities of the project

Followings are the proposed activities to accomplish the objectives of the project.

First Year

i. Preparation of database on beneficiaries and the business plan
ii. Submission and granting approval for the business plan
iii. Signing of agreements with relevant parties
iv. Initiation and completion of tender procedures for procurement of tools and machineries to be distributed among beneficiaries and regional collecting centers and processing center at Ambagastenne
v. Initiation and completion of construction of processing center at Ambagastenna
vi. Completion of procurement of tools and machineries
vii. Conducting awareness programs for beneficiaries
viii. Conducting training programs on agronomic practices and compost making
ix. Renting of regional collecting centers at Kumbaloluwa, Pussellamuduna and Weragama
x. Training of beneficiaries on harvesting, postharvest practices, marketing aspects and entrepreneur skills
xi. Recruitment of supporting staff and training them for machine operation and purchasing of green berries
xii. Installation of machineries and conducting test-runs at the collecting and processing centers xiii. Starting and completion of mature green berry purchasing
xiii. Starting processing and value-adding operations at Ambagastenna processing center
xiv. Conducting of post-season training sessions on organic manure and fertilizer applications and pruning of shade trees
xv. Conducting of year-end discussion on the progress and planning of 2020 activities xvii. Training of beneficiaries on maintenance activities

Second Year

i. Conducting training programs on soil and moisture conservation
ii. Conducting training programs on light berry harvesting
iii. Trading of light berries
iv. Initiation of fair-trade certification process
v. Conducting training programs on fair-trade
vi. Conducting training programs on processing and marketing
vii. Trading of mature green berries
viii. Conducting training programs on post-season maintenance
ix. Conducting of year-end discussion on the progress and planning of 2020 activities

Third Year

Initiation of organic certification process ii. Trading of light green berries iii. Trading of mature green berries

2.3 Expected output of the project

Agronomic Aspects

i. Unsatisfactory to satisfactory level with repairing the existing drains, terraces etc and digging moisture holding pits between pepper rows
ii. Clean weeding in irregular intervals is discouraged and slash weeding at regular intervals with a bush cutter is promoted to increase efficiency and reduce labor cost
iii. Thrice a year, using pruning knives and ladders provided by the project suit to the job
iv. Relatively higher quantity of leaf matter yielded when shade trees are pruned thrice a year and slash weeding is done using a bush cutter
v. Improved harvesting practices
vi. Harvesting with family-laborer with the use of a safety ladder provided as grant
vii. Regular harvesting for quality green berries after 4.5 months or after 7 months for mature berries
viii. Use of hygienic bags for harvesting
ix. Use of threshers for separation of berries from spikes
x. Cleanliness of the sold berries
xi. Transporting within two days to colleting centers
xii. Increase of yield from 2.5kg to 5.0 kg per vine

Marketing Aspects

i. Reduction of transport cost due to new collecting centers
ii. Accurate weighing and reducing unnecessary reduction of sales amount due to electronic weighing machines
iii. Stable and accepted prices
iv. Payments for the sales within two days to their bank accounts
v. Processing and grading is only at processing centers
vi. Quality of the product will be improved due to use of machines for threshing within two days.
vii. Reduction of wastes due to using hygienic bags in harvesting, transport and processing within a short period of time.
viii. Increased women participation with new equipment and tools given through the project

2.4 Project benefits/outcomes

At the end of the project following outcomes to be accomplished.

i. The recommended agronomic and harvesting practices are practiced by the beneficiaries.
ii. The pepper growers will not face marketing difficulties due to rainy weather during harvesting season which hampers the drying process.
iii. The yield of individual growers will increase by two-fold and consequently the income of the growers will be increased.
iv. Indiscriminate harvesting is reduced and a good grade pepper is produced for export.
v. The pepper growers are not subject to frequent price fluctuation and the market is assured.

vi. Once the fair-trade certification is obtained a minimum price is fixed to pepper irrespective of local pepper price.
vii. Growers will become 'disciplined pepper growers' who refrain from doing indiscriminate harvesting.
viii. A brand will be created as 'Rattota pepper' and quality pepper is marketed.
ix. Rattota pepper will capture a high-end market deviating from Indian market through the World wide Commodities (Pvt).
x. Entrepreneur skills of beneficiaries will be improved.
xi. Women participation in pepper industry will be strengthen.
xii. The link between the cooperative society and its members (pepper growers) will be strengthened.
xiii. The financial assets and its current status of the cooperative society will be improved through capacity building by a service provider and through grant.

3 Objectives of the AOS

The annual outcome survey (AOS) is a project monitoring and evaluation (M&E) tool introduced by the IFAD in 2009 to measure the progress of IFAD-funded operations towards their objectives. The aim of this assignment-related AOS is to assess the outputs and outcomes of the project which has been implemented under the SAP program. Accordingly, the scope of the AOS includes the study of cost of production, production, productivity, and profitability of Pepper Cultivation with channeled marketing and Processing for Improving Income of Pepper Growers in Rattota and Ambangangakorale of Matale District and the comparison of the outputs and outcomes indicators with baseline situation. As spelled out in the TOR, the objectives of the AOS are:

1) To measure the positive and/or negative changes/outcomes taking place on relevant indicators at the household/farmer organization /agribusiness level,
2) To measure the significant changes of the function of pepper value chain: value chain development, inclusive business, gender and social inclusion, partnership in business (productivity, production and processing), access to inputs/ information/ technology/ infrastructure etc. in line within project proposal;
3) To provide timely performance information so that corrective actions may be taken to implement the project activities, if required;
4) To provide early evidence of project success or failure; and
5) To provide the opinions on the achievements as felt by the direct beneficiaries of the project

The first and second objectives deal with the changes happening in pepper cultivation and marketing associated with outputs and outcomes indicators at the household level; farmer organization level and agribusiness level during the project life. The third objective provides information on current performance of project activities that is necessary to undertake corrective actions if necessary. The fourth objective provides early evidences of project success or failure. The final objective focuses on how project beneficiaries felt about the project. Overall, last three objectives of the assignment provide information for planning efficient strategies and operational models for better outputs and outcomes and more efficient use of resources. Overall, the purpose of the assignment is to measure whether the Improvement of Production and Quality of Pepper with channeled marketing and Processing for Improving Income of Pepper Growers in Rattota and Ambangangakorale of Matale District project is meeting its objectives and to assess the quality of implementation processes including targeting, participation and service provision.

4 Methodology Adopted

The framework for the AOS was developed based on the IFAD Annual Outcome Survey Designing 2016. The AOS expects to conduct both the quantitative and qualitative assessment of major project activities in relation to the project outputs and outcomes. Quantitative data were collected through a questionnaire survey with household interviews while qualitative data were acquired through Focus Group Discussions (FGDs) and Key Informants Interviews (KIIs).

4.1 Preliminary studies

In order to design questionnaires and guidelines for FGDs, preliminary field visits were conducted in the project areas to observe activities of the project. Field visits and discussions were made with beneficiary households and different stakeholders including government officers and social leaders, in addition to observations made on different activities. Based on the information gathered following steps of the evaluation process were planned. Arrangements for the sample surveys were made in these preliminary visits.

4.2 Sample survey

Questionnaire based household survey was conducted for the given sample of according to the ToR. Household questionnaire will be a composite of geographical information of the location of meeting the households, demographic information of the HHs, incomes and assets of, food security information of HHs, human and social capital and empowerment information, institutions and policies involved, gender equity and women's empowerment, access to markets, environment and natural resource perspectives, adaption to climate change knowledge management and financing. The HH survey was conducted using e-devices (Smart phone and tabs) by trained investigators and supervised by the supervisors for the accuracy of the data and to minimize the non-sampling errors. Respondents will be informed in advance through telephone before visiting their houses. At the end of each day of data collection review meetings were held to discuss the completed questionnaires. Consultants were also in the field to supervise enumerators' work, to conduct key personnel interviews and to perform site inspection.

4.3 Sample size and Sample distribution

The same sample used for the baseline survey - 347 households- was given to use for the survey. However, it was revealed that all households in the list are not the beneficiaries of the project. Therefore, in order to complete the list a random sample was taken from the entire list of beneficiaries available at the Rattota MPCS. Total sample size of the beneficiaries was 358 households.

The control group - non-beneficiaries of the project- of 36 respondents was taken from the same list as there were non-beneficiaries in the given list.

Table 4.1: Sample Distribution of the Annual Outcome Survey

	Beneficiaries		**Non-beneficiaries**		**Total Sample Size**
DS Division	**Rattota**	**Abangangakorale**	**Rattota**	**Abanganga Korale**	
Male	103	91	7	7	208
Female	72	92	4	18	186
	175	183	11	25	
Total	358		36		394

4.4 Developing the survey questionnaire

Draft questionnaire was prepared based on objective and purpose. As the household asset index should be compared with the baseline, the same assets and questions were included in this survey also. Income and expenditure also measured using the same criteria as in baseline survey in order to compare the indicators.

The survey tools were pre-tested by the enumerators and refined before being used for data collection. The questionnaire was converted to e-platform for collecting data using mobile phones and tabs. In the Electronic Data Capturing (EDC) the data were collected using electronic devices such as tablet computers and mobile phones, and sent to server where the data is retrieved without having to manually enter data. In this survey it was used the KOBO TOOLBOX. This online platform of the KOBO TOOLBOX was selected considering the time, cost of material handling, speed and efficiency, quality of data, visibility and possibility of tracking.

4.5 Setting up of the survey team

Six educated and skilled investigators were assigned for the task of data collection with the standard mobile tools. An orientation program covering all important aspects/activities was conducted prior to the commencement of the field survey. This was delivered through a workshop to Project Coordinators, Enumerators and project staff participating in the survey. The survey tools and activities of the survey were discussed and finalized at these training.

4.6 Conducting the survey.

On completion of orientation/ training, enumerators are set off to carry out pre-testing of the developed survey tools. Enumerators were then set off to collect data using the developed survey tools. They were to collect relevant data through face-to-face interviews with project beneficiaries.

Enumerators were to keep constant contact with the supervisors. The supervisors guided and supervised the work of enumerators. Enumerators regularly submitted collected data, as and when those were ready, to the Data Management Specialist.

Supervisors checked the data for accuracy by, (1) Spot checking by means of a limited number of field visits to randomly selected beneficiaries and (2) Cross-referencing by comparing field data collected by enumerators with the information provided by the enumerators. The officers of the Rattota MPCS supported to find the places of households and transport facilities were provided to the investigators during the data collection process.

4.7 Focus Group Discussions

In order to crosscheck and qualify the findings of the quantitative data and the information from the sample survey, qualitative information was collected through FGDs. In conducting

the Focus Group Discussions, pre-design formats was used. The participants of the FGD's were carefully selected by representing beneficiaries and the key actors of the programme. Focus Group Discussions were carried out in the directions of relevance of the activities, adequacy of each activity to achieve the objectives, efficiency and effectiveness of strategies adopted to implement planned activities, negative and positive externalities or side effects of each activity, transparency of the implementation process, sustainability of implemented activities, repeatability and achievements of the planned activities. In the FGDs, the information collected through the sample survey will be cross checked and validated.

4.8 Key-Personal Interviews

The project staffs and other stakeholders such as traders and community leaders were interviewed for required information. The officers of the Department of Export Agriculture including Director General and Deputy Directors, Relevant Officers of the Rattota Cooperative Society, Project Officers, and Community Leaders in the project area are some of the key informants. The list of the key informants are attached.

4.9 Direct Observations

Direct observations were made in the project sites to visualize quality of the development through project intervention and infrastructure facilities developed and agronomic practices and marketing practices resulting in trainings. Observations were made through field visits using a checklist to visualize the change in vegetation cover, cropping patterns, income diversification, improvement of HH asset base, infrastructures development to improve access for markets, wealth accumulated at society level, collective marketing and processing undertaking by societies, knowledge sharing and visibility, etc.

In order to come in to meaningful conclusions the data were collected in quantitative form as far as possible rather than the qualitative information. Beneficiary views about the project intervention and effects, their participation, satisfaction of the interventions and the quality of the advisory services (extension services) received were evaluated using rank scale.

The HH survey data were compiled in EXCELL data sheets and were analyzed using descriptive statistical tools, mainly bar-charts for the comparison with the baseline figures, parametric and non-parametric inferential statistical tools which are relevant and appropriate supporting the SPSS and other statistical software. As the methodology used to evaluate the HHAI in baseline survey was the Principle Component analysis, the same methodology was used for the comparison in addition to finding the elements of assets which has been changed during the period.

5 Findings of Annual Outcome Survey

5.1.A Demographic information of the beneficiaries

The project includes 2500 direct beneficiaries who received equipment given by the project and participated in training sessions. According to the list of the beneficiaries, 1443 are male and 1057 are women. Table 5.1 summarizes the demographic information of the beneficiary farmers of the sample interviewed. A majority of the beneficiaries are above the age category of more than 4o years. About 10% of the farmers are in the age category of above 70 years. Family size of the majority of farmers is between 3-5. In many of the families number of male and female members is two or three. Average number of male and female members per family above 18 years was 1.41 and 1.47 respectively.

Table 5.1: Demographic information of the beneficiary sample

Gender of the farmer	**Gender**	**Frequency**	**%**
	Male	194	54.2
	Female	164	45.8
Respondents Position of the household	**Position**	**Number**	**%**
	Head	183	51.1
	Other	175	48.9
Age of the farmer	**Age category**	**Frequency**	**%**
	30>	4	1
	31-40	27	8
	41-50	90	25
	51-60	114	32
	61-70	87	24
	70<	36	10
Family size of the farmer			
	Family size	Frequency	%
	1	19	5
	2	62	17
	3	57	16
	4	106	30
	5	82	23
	6	23	6
	7<	9	3
	Average family size	3.77	

5.1.B: Holding size of pepper cultivation

The average area of cultivation of pepper in the sample households is 1.22 ac which ranges between 0.25 ac to 7 ac. Average number of vines per households is 757 which ranges between 50 and 8000. The average yield per vine is 2.11kg (male famers 2.46kg and female farmers 1.72kg) . Average yield per acre ranges between 30 to 6000 kg with the average of 707kg per acre. It is important to note that , some of the farmers with less than 300 vines and less than half an acre land area also have received the grass cutter, which will not be useful.

Following table 5.2 shows the holding sizes and number of pepper vines of beneficiaries. It shows that about 17% of the farmers are having less than 300 pepper vines which is below to the minimum requirement to be a beneficiary.

Table 5.2: Holding sizes and number of pepper vines of beneficiaries

Number of pepper vines per sample household				
Number of vines	**Number of farmers**	**Minimum**	**Maximum**	**Average**
300 >	60 (16.8%)	50	8000	757 (Male 882, Female 601)
301-1000	229 (64%)			
1000<	69 (19.2%)			
Area of pepper cultivation per sample household				
Area (acres)	**Number of farmers**	**Minimum**	**Maximum**	**Average**
0.5 ac >	13 (3.6%)	0.25	7	1.22 (Male 1.41, Female 1.01)
0.5 – 1	240 (67%)			
1<	105 (29.4%)			

5.2 Participation of enterprises proposed by the project

5.2 A: Number of households joined with the project

Rattota MPCS is the coordinator of the project and 2500 households who are producing pepper with a minimum of 300 pepper vines in Rattota and Abangangakorale DS divisions are the beneficiaries. Out of the beneficiaries, 1447 are male and 1053 are women according to the list of the beneficiaries. However, the females who are engaged in the project are not the heads of the households.

5.2.B: Grants and assistance given by the project

Table 5.3 summarizes the benefits received from the project, quality of inputs and adaptation or use of the inputs according to farmers' responses. The ladder, knife and the bush cutter have been received to all farmers and they report that the equipment are good in quality. However, a significant number of farmers have not attended to training programmes especially the training on entrepreneurship and record keeping. The proposed collecting centers and credit facilities have not been initiated.

Table 5.3: Percentage of farmers who received benefits from the project

	Received /Participated the benefit	**Reported the good quality**	**Use / adopted the input**
1.Prunning knives	100.0	96	97
2.Bush cutter	100.0	96	98
3. Ladder	100.0	97	97
4. Training on agronomic practices	73.5	74	83
5. Training on harvesting	62.6	64	74
6.Training on entrepreneurship	51.4	52	62
7. Training of record keeping	52.8	45	49
8. Access to collecting centers	Collecting centers are under construction		
9. Credit facilities	Not initiated		

5.2.C: Present status of cultural practices in pepper cultivation with the project intervention

Table 5.4 shows number of farmers who are practicing good cultural practices in order to increase the yield and productivity of pepper cultivation introduced through the project. Application of chemical fertilizer is very minimal in the area (about 3%). Irrigation is also not a common practice in the project area. It was observed that pruning of shade trees in an appropriate frequency, harvesting at the correct time and harvesting using recommendations have been increased significantly compared to the baseline.

Table 5.4: Status of selected cultural practices in pepper cultivation

	Activity	Number of farmers	Percentage
1.Fertilizer application	No fertilizer	210	58.7
	Organic fertilizer only	137	38.3
	Chemical Fertilizer only	2	0.6
	Both Chemical and Organic	10	2.8
2.Irrigation	No irrigation at all	333	93.0
	Manual watering	24	6.7
	Sprinkler irrigation	0	0.0
	Drip irrigation	1	0.3
3.Source of irrigation water	Rain-fed only	351	98.0
	Own well	5	1.4
	Canals	2	0.6
	Rural water supply	4	1.1
4.Pruning of shade trees	Not practiced	1	0.3
	Irregular and occasional	4	1.1
	Once a year	93	26.0
	Twice a year	245	68.4
	Thrice a year	14	3.9
5.Weed control method	Not at all	11	3.1
	Clean and regular	4	1.1
	Clean and irregular	78	21.8
	Slashing occasional	7	2.0
	Slashing regular	18	5.0
	Using bush cutter	312	87.2
6.Mulching of plant base	No mulching	227	63.4
	Using lopping occasionally	22	6.1
	Using lopping regularly	108	30.2
	Other mulching materials	3	0.8
7.Harvesting method	Using used bags	268	74.9
	Using new bags purchased	90	25.1
8.Harvesting time	Irregular harvesting time	2	0.6
	Immature harvesting before 4.5 mts	5	1.4
	Immature harvesting after 4.5 mts	35	9.8
	Mature harvesting after 7 mts	320	89.4
9.Labour use in harvesting	Family labor only	64	17.9
	Hired labour only	112	31.3
	Both family labour and hired labour	182	50.8
10.Threshing	Trampling and manual	355	99.2
	Using threshers	3	0.8

According to baseline indicators, about 33% of the farmers prune shade trees twice a year and 2.1% of the farmers use new bags for harvesting. For other cultural practices, baseline data is not available for comparison. Following graph compare the pruning of shade trees and use of new bags of the beneficiary household with the baseline figures. It shows that both aspects have been improved with the project intervention.

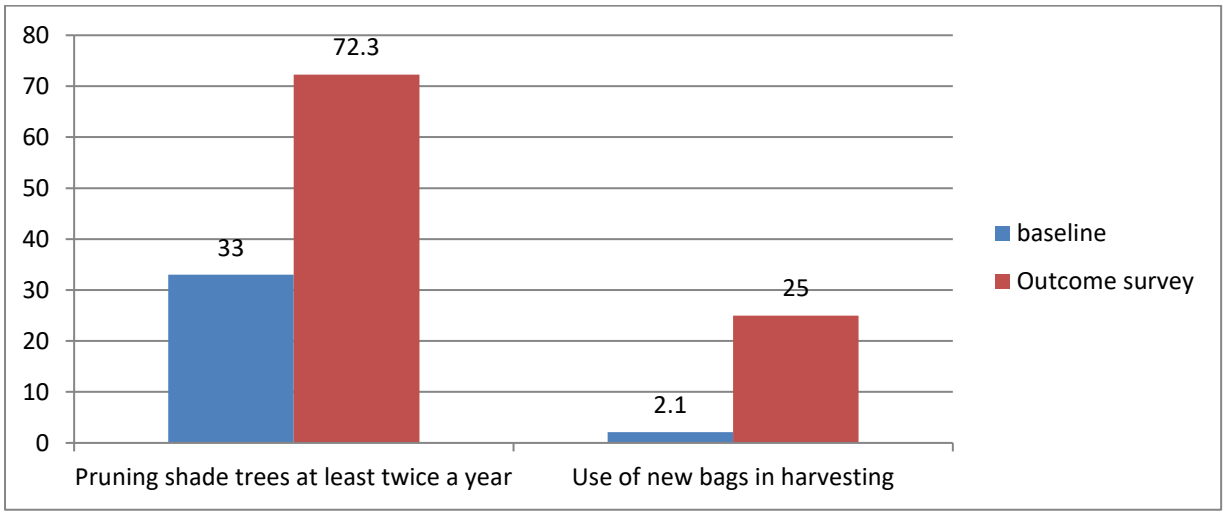

Figure 1 : Comparison of pruning of shade trees and use of new bags in harvesting

As the data for other cultural practices are not available in baseline survey report, those aspects were compared with the non-beneficiaries of the AOS. Following table shows the comparisons of selected agronomic practices of beneficiary households and non-beneficiary households.

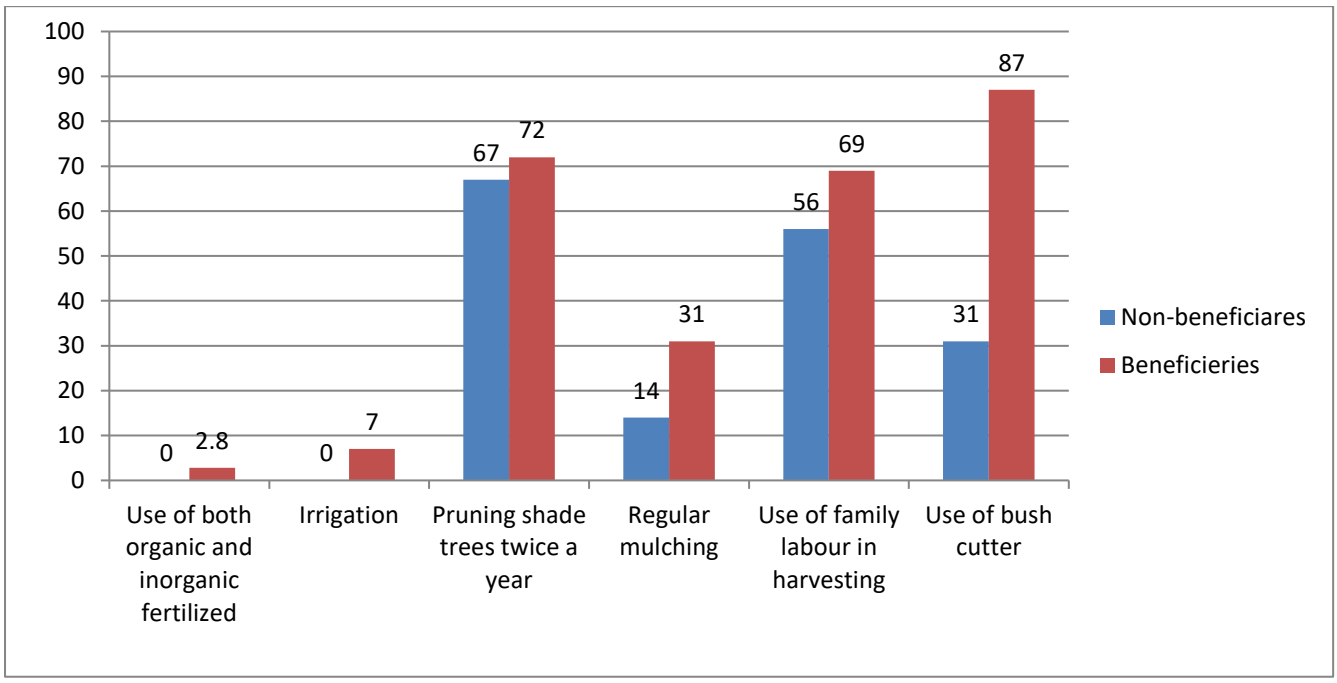

Figure 2: Differences of selected agronomic practices between beneficiary farmers and non-beneficiary farmers.

5.3 Market access

Improvement of market access through establishment of three collecting centers and a processing center equipped with modern machineries was a main component proposed by the project. The construction work has been delayed due to price changes with the economic crisis in 2022. The

estimated funds for constructions were not sufficient to complete buildings due to substantial increase of prices of building materials. Therefore, out of three proposed collecting centers, the construction work of two collecting centers has been partially completed. Following machineries and equipment have been purchased. The building of the processing center is also partially completed. Following equipment have been already purchased.

- Moisture meter 01,
- Pepper threshers 03,
- Grinder 01,
- Shifter 01,
- Vibration screen 01,
- Band sealer 01, Large scales 03,
- Small scales 03,
- Bag sewing machine 01,
- Vacuum sealer 01.
- Drier (Purchasing process is going on)

The equipment and machineries have been kept in the stores. In the last two years, the Rattota MPCS has not involved in purchasing of pepper from the beneficiaries.
Average price of the fresh berries has been increased from 165 Rs/kg at the time of baseline survey to Rs. 350 per kg at the time of AOS. However, the change is not due to practices introduced by the project.

5.4 Productivity improvements

5.4.A: Changes of pepper yield

Average harvest in the last season was 707 kg of green berries per acre (1747kg/ha), of beneficiary families which is several folds higher than the baseline value of 208kg per acre (560.67kg/ha). The average yield of green berries of the non-beneficiary farmers was 518kg per acre (1280kg/ha). Following graph compares the average yield of beneficiary farmers and non-beneficiary farmers with the baseline yield.

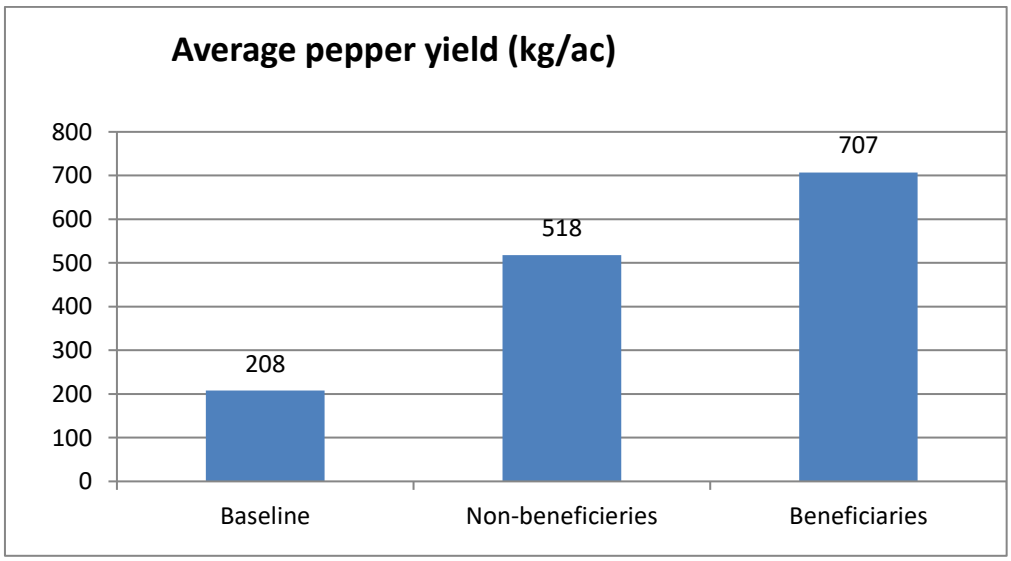

Figure 3: Comparison of pepper yields

The fruiting behavior of pepper is not only a function of cultural practices and crop care. The environmental factors also will change the yield as the heavy rains during the flowering period adversely affect the yield. Therefore, the yield difference between beneficiary and non-beneficiary farmers are meaningful.

Out of the green berries harvested by the farmers, about 95% are mature berries and 5% are immature berries which receive low price. Average prices in the last season are given in the table 5.5.

Table 5.5: Price obtained at the last sale (Rs./kg)

	Green berries good quality	Green berries Rejects	Dry pepper
Min	160.00	50.00	500.00
Max	850.00	360.00	2100.00
Average	383.91	241.88	1509.09

During the last season, the farmers have received a good price for their products. Assuming that about 95% of the green berries harvest is in standard quality, the average income per acre can be estimated as LKR 266403.00 (257853+8551).

5.4.B: Changes of production of pepper with the intervention of the project

Compared to the baseline survey, the average yield per acre has been increased by 107%. However, the change of average yield per pepper vine cannot be calculated as the baseline data is not available.

About 85% of the farmers are obtaining more than baseline yield as the baseline yield is only 208kg/ac. However, compared to the yield in the year 2022, the yield in 2023 was low due to environmental factors. The Department of Export Agriculture also verified the situation. Therefore, out of the farmers interviewed only 57 (16%) farmers reported that their production has been increased in the last year as they are comparing the production with the previous year.

In order to compare the production of household, the baseline figure is not available. Average production of row berries per farmer was 271 kg (Mature berries 258kg + immature berries 13kg) in AOS.

5.5 Costs and Returns

Annual Costs per acre in the baseline study was Rs. 69443.20/ha (Rs. 28103/ac) and the annual income was Rs. 92400.00/ha (Rs.37394/ac). Therefore the estimated gross profit was Rs.22957/ac. The annual outcome survey estimated that the total cash cost is Rs. 59618.26/ha (Rs.24127.18/ac) and the average annual cash income was Rs247450/ac at the average price of Rs. 350.00/kg. The estimated gross profit per acre is Rs.223457 per year which is approximately Rs. 18610.25 per month. Cash expenditure has been reduced due to involvement of more family labour in different activities with the given equipment and the annual cash income has been increased due to increased production of green berries and mostly increased prices of green berries.

Table 5.6: Average annual cash expenditure of maintaining one acre of pepper land.

Activity	Cost (LKR/Year)
Weed control	4079.87
Pest and disease control	229.20
Lopping and pruning	8098.78
Harvesting	9285.00
Mulching	584.46
Drying	103.14
Packing and transport	1663.07
Other	83.66
Total	24127.18

As many of the farmers are using only the family labour for many of the activities, cash expenditure for many of the activities are minimal. With given inputs through the project, the family labour use has been increased during last two years. Following figures compared the expenditure of maintaining one acre of land of the baseline survey and annual outcome survey. Annual cost per hectare has been reduced from LKR 69443.30 to LKR 59618.26 by 14%.

Average costs of production of green berries has been reduced from Rs.125.57 to Rs.115.90 per kg which is about a reduction of 7.7%. Following graph illustrate the comparison of prices, cost of production and gross profit per kg of fresh berries.

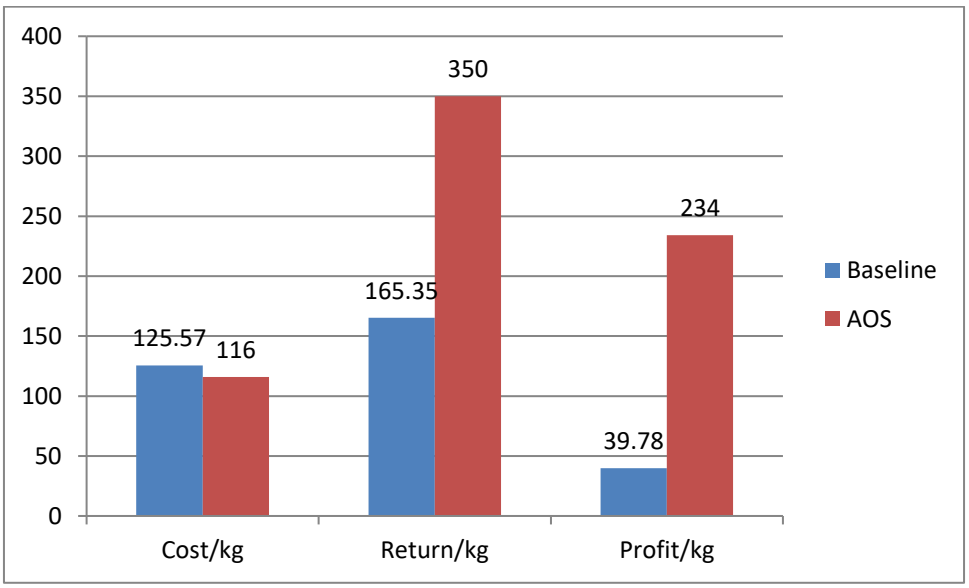

Figure 4: Comparison of cost of production, prices and profit per kg of the baseline study and the AOS

Although the average costs of production reduced, only 47% (147 farmers) of the sample farmers stated that the costs of production reduced.

Sales prices of green berries have been increased from Rs. 163 to Rs.350.00 per kg and the same time the price of the dried berries has been increased from Rs 533/kg of baseline survey period to Rs.1525/kg (ranges between Rs.800.00 – 2100.00/kg) at the time of AOS. There is no differences

between prices received by the beneficiaries and non-beneficiaries of the project as both groups are selling to the same collectors. Following graph shows the comparison of prices at the time of baseline and AOS.

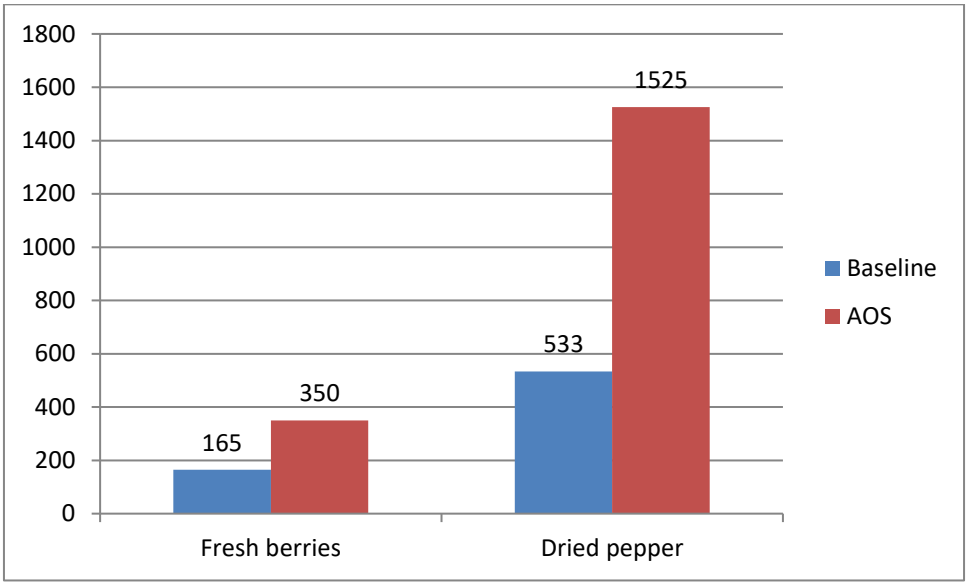

Figure 5: Comparison of sale prices of fresh berries and dried pepper

About 26.5% of the farmers sell their green pepper to the intermediate collectors at the village and about 75.4% of the farmers transport their products to the nearby city and sell to the collectors. During the last season, the Rattota MPCS has not purchased green pepper.

Following table 5.7 compares the average cash expenditure per farmer irrespective to the size of the land area. The data reveals that the main cost items are the lopping cost and harvesting cost which is about 71% of the total cash cost.

Table 5.7: Average annual cost per average farmer.

Activity	Cost LKR	Percentage
Weed control	4972.21	17
Pest and disease control	279.33	1
Lopping and pruning	9870.11	34
Mulching	712.29	2
Harvesting	10811.35	37
Drying	125.70	0
Packing and transport	2026.82	7
Other	101.96	0

Another important point was that many of the farmers are not spending on some of the activities as they can use family labour with the use of bush cutter, pruning knife and the aluminum ladder given by the project. Following table shows number of farmers not spending money for selected activities.

Table 5.8: Number of farmers who are not spending for selected practices

Activity	Number of farmers	Percentage
Weed control	118	33.0
Pest and disease control	356	99.4
Lopping and pruning	130	36.3
Mulching	351	98.0
Drying	352	98.3
Packing and transport	87	24.3

5.6 Income of the households and Asset index

5.6 A: Increment of household income

Table 5.9 shows the monthly income of the beneficiary families. As the agricultural income is not a monthly basis, such categories were brought to monthly basis with suitable calculations. Salary is the main source of monthly income followed by agricultural income.

Table 5.9: Average income of the households from different sources per month (LKR)

Source of income	Monthly Income	Percentage of total income
Field crops (Paddy, cereals, legumes, vegetables)	8123.18	15.4
Spice Crops (Turmeric, Chili, Clove, Cardamom, Pepper, etc.))	5703.21	10.8
Other Crops	1343.58	2.5
Livestock Management (Dairy, Poultry, etc.)	675.98	1.3
Salary (Public and Private Sector Jobs)	17977.65	34.0
Wage (Agricultural and Non-Agricultural Wage Labors)	4024.44	7.6
Self-Employment	4412.01	8.3
Received from Foreign Employments	2178.77	4.1
Social Welfare Benefits (Samurdhi, Elderly Payment, etc.)	1403.77	2.7
Pensions	4897.21	9.3
Others (Not mentioned in the above)	2171.79	4.1
Total per month	52911.59	100.0

The average household monthly income was recorded as LKR 38681.50 in the baseline. The average monthly income of the beneficiary households has been increased by 37% up to LKR 52911.59. The average monthly income of the households of non-beneficiary families was LKR. 45479.22 of which an increment of only 17.62%. Therefore, it can be concluded that comparative income increment of beneficiary families despite to the increment of price levels. Following graph shows the comparison of monthly household income of baseline, beneficiary households and non-beneficiary households.

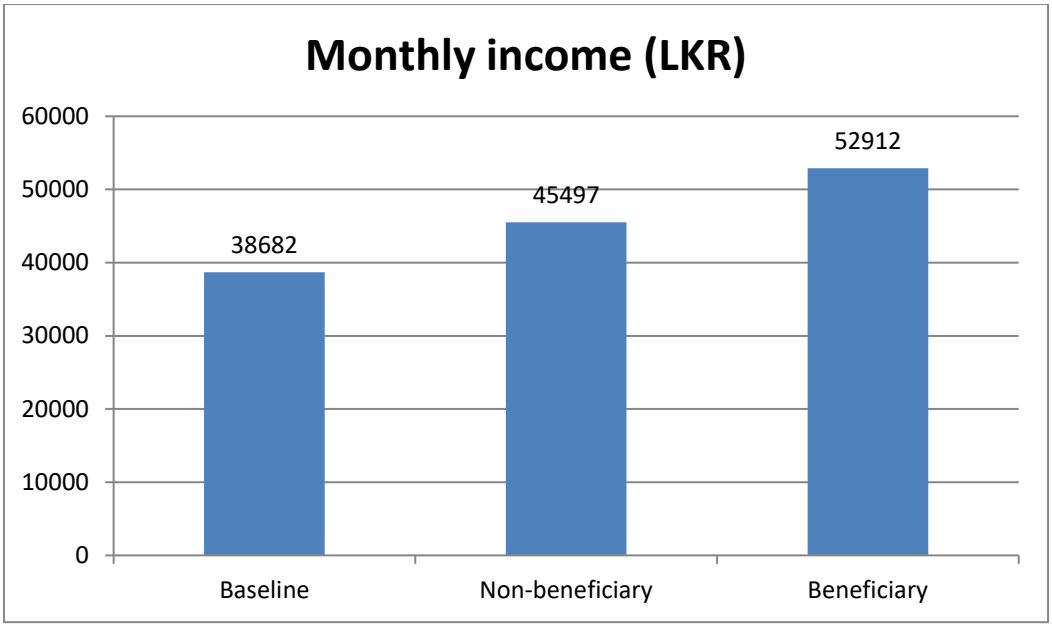

Figure 6: Comparison of monthly household income

Table 5.10 Percentage of households recorded the increment of family income is given in the following table.

	Percentage who recorded income increase	Percentage who recorded income increase over 20%
Male	57	44
Female	65	47
Total	59	45

Above analysis shows the income increment over 20% is higher of female respondents copared to male respondents although the diference is not significant.

Increment of average overall family income from Rs.38681/ month to Rs. 52912/month is about the increment of 36.8%.

Income increment from the pepper industry is from Rs.7700 per month to Rs.22618 per month is about 193.7%. Percentage of farmers recorded the increment of income from pepper is about 63% of the total respondents. The income increment is mainly due to increment of prices of pepper.

5.6 B: Monthly expenditure of households

Table 5.10 classifies the composition of family expenditure of the household. Expenditure for food is dominant and it accounts about 60% of the total expenditure.

Table 5.11: Monthly family expenditure of beneficiary households (LKR)

Category of expenditure	Amount	Percentage of the total expenditure
Food Commodities and Cooking Fuel	24096.93	56.9
Health (Medicine and Consultation of Doctors	3579.89	8.5
Education / Training	5138.27	12.1
Household Maintenance (Electricity, Water etc.) and Rentals etc.	1961.12	4.6

Cloths, Jewelry etc.	79.61	0.2
Communication (Telephone, Mobile, Internet, etc.)	826.91	2.0
Loan Installment Payments and Insurance etc.	2899.33	6.8
Transport / Fuel for Own Vehicles	3405.59	8.0
Alcohol, Smoking and Gambling etc.	40.50	0.1
Entertainment etc.	5.59	0.0
Charity Work.	147.07	0.3
Investments on Agriculture and other enterprises	181.56	0.4
Total	42362.35	100

Compared to the baseline figure 31198.10, average monthly expenditure also has been significantly increased due to increased prices of beneficiary families. Following graph shows the monthly expenditure of the beneficiary families and non-beneficiary families compared to the baseline.

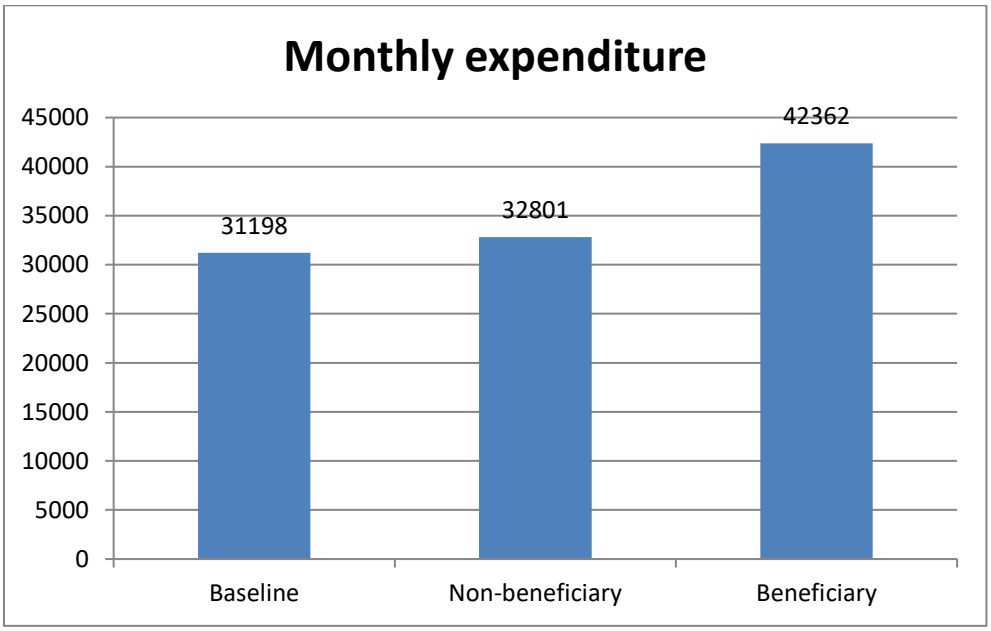

Figure 7: Comparison of monthly household expenditure

5.6.C: Household assets

5.6.C.1 Housing of the beneficiary families

The study revealed that all the households are living in permanent shelters. Roofs are either asbestos of clay tile (90%<), floor is either cemented or tiled (100%) and the walls are permanent. Table 5.11 classifies the conditions of houses.

Table 5.12: Housing conditions of the beneficiaries

Roof type of the house	Type	Number	Percentage
	Cadjan	0	0.0
	Straw	0	0.0
	Wood	0	0.0
	Metal	10	2.8
	Aluminum	26	7.3
	Concrete	21	5.9
	Asbestos	297	83.0
	Tile	24	6.7
Floor	Mud / Soil	8	2.2
	Cement	296	82.7
	Tile	70	19.6
	Terazo	1	0.3
Walls	Wood / Temporary	3	0.8
	Cement/Bricks	188	52.5
	Plastered and polished	176	49.2

5.6.C.2 Facilities of the living environment

Table 5.12 shows the house hold utilities such as drinking water, sanitary facilities, lighting and type of cooking fuel. The majority are having good quality water from Water Board, Rural Water Supply Schemes or protected wells. Almost all are having latrine facilities at their homes. Almost all houses have the electricity connection from the national grid while the majority are using firewood in cooking.

Table 5.13: Household facilities

Drinking water sources	Water source	Number of households	Percentage
	Protected spring	2	0.6
	Unprotected spring	1	0.3
	Protected well	88	24.6
	Unprotected well	33	9.2
	Rural water supply	93	26.0
	Water Board	145	40.5
	Public tap	7	2.0
	Rainwater collection	2	0.6
	Bottled water	0	0.0
	Tank/browser	2	0.6
	Other	7	2.0
Latrine Facilities	Open Pit	2	0.6
	Closed pit with water	140	39.1

	Squatting Fan	172	48.0
	Commode	44	12.3
Lighting facilities	Electricity	357	99.7
	Kerosene	1	0.3
Cooking fuel	Firewood	292	81.6
	LP Gas	91	25.4
	Bio gas	2	0.6
	Electricity	7	2.0

5.6.C.3: Type of ownership of residential land and the house

The data revealed that the majority of the respondents are residing their own land and houses (89%) followed by the rented houses. Table 5.13 classifies the type of ownership.

Table. 5.14: Ownership of the house and land of residence

	Category	**Number of households**	**Percentage**
House of residence	Owned	318	88.8
	Rent /lease	35	9.8
	Relatives	5	1.4
Land of residence	Owned	318	88.8
	Rent / lease	36	10.1
	Relatives	4	1.1

5.6.C.4: Animal husbandry activities of the beneficiary families

Poultry farming is done by 42 families and cattle management is conducted by only 23 families out of 358 families. The data in the table 5.14 implies that the animal husbandry is not a dominant enterprise in the area.

Table 5.15: Animal Husbandry and Livestock

Livestock type	**Number of farmers**	**Percentage**
Buffaloes	5	1.4
Cattle	23	6.4
Poultry / Layers	14	3.9
Poultry Layers	28	7.8
Goats	13	3.6

5.6.C.5: Ownership of agricultural equipment and tools.

Availability of agricultural equipment is compulsory to use modern agricultural technology. However, the table 5.15 reveal that except the bush culler and aluminum ladder given by the project, availability of agricultural equipment is very minimal. Out of 358 farmers interviewed only 33 families are having water pumps.

Table 5.16: Ownership of agricultural equipment

Equipment	Number of households	Percentage
Manual Sprayers	52	14.5
Power sprayers	5	1.4
Water pumps	33	9.2
Seeders	1	0.3
2WT	2	0.6
4WT	3	0.8
Threshers	7	2.0

5.6.C.6: Ownership of utility assets of the households

Refrigerators, Televisions, and mobile phones have become the compulsory assets while availability of other utility assets are not dominant. Details are shown in the table 5.16.

Table 5.17: Ownership of utility assets of households

Assets	Number of households	Percentage
Radio / Cassette Player	218	60.9
Television	345	96.4
V.C.D / D.V. D	56	15.6
Sewing Machine	107	29.9
Washing Machine	86	24.0
Refrigerator	263	73.5
Cooker (Gas / Electric)	141	39.4
Oven	33	9.2
Electric Kettle	93	26.0
Blender	198	55.3
Electric Fans	139	38.8
Telephone (Domestic)	58	16.2
Telephone (Mobile)	319	89.1
Personal Computer	47	13.1
Camera / Video Camera	46	12.8
Bicycles	32	8.9
Motor Cycles / scooters	106	29.6
Three-wheelers	113	31.6
Motor Cars / Vans	31	8.7
Bus / Lorry / Tipper	13	3.6

5.6.C.7 Acquisition of new assets and development after the project implementation.

Question asked for this section is what are the assets acquired or renovated or improved after the implementation of the project. The data in the table 5.17 reveal that only less than 10% of the farmers have acquired or renovated the assets considered.

Table 5.18: Renovation and improvement of facilities during the period of 2022 and 2023

Category	Number of farmers	Percentage
Roof	25	7.0
Floor	18	5.0
Walls	31	8.7
Toilet facilities	9	2.5
Cooking energy	1	0.3

5.6.C.8 Household Asset Index

Calculation of household asset index was done using the procedure followed in the baseline study using the same number of assets in order to comparison. The computational procedure is given in Annex 1.

The HHAI has been slightly increased as some of the households acquired or constructed new facilities as given in the table 5.17. The HHAI has increased from 37.81 of the baseline survey to 42.9954at AOS by points 5.2 which is about an increment of 13.7%. Following figure illustrate the changes of HHAI of beneficiary farmers.

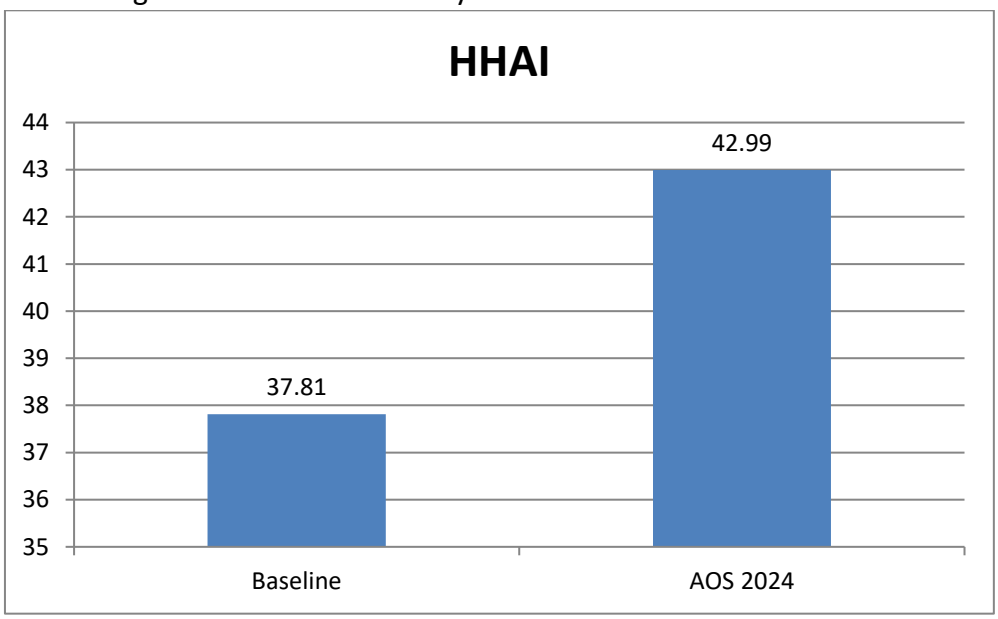

Figure 8: Comparison of HHAI

5.7: Constraints in Pepper cultivation according to farmers' view

The majority of the farmers has reported that the price instability, and the processing are very critical constraints, although the project has not attended to solve the issues so far. Table 5.18 lists the constraints according to the farmers.

Table 5.19: Existing issues in pepper cultivation

Constraints	Number of farmers	Percentage of farmers
1. Pests and diseases	225	62.8
2. Fertilizer prices	231	64.5
3. In adequate labour	249	69.6
4. No proper extension service	250	69.8
5. Water scarcity	320	89.4
6. Absence of quality planting materials	285	79.6
7. Unstable prices	355	99.2
8. Difficulty of harvesting	305	85.2
9. Difficulty of processing (Threshing)	334	93.3
10.Difficulty in storage	314	87.7
11. Uncertain whether	349	97.5
12. Price and weight manipulation by buyers	310	86.6
13. Difficulty of maintaining quality	308	86.0

5.8: Status of farmers field observed through direct observation

Investigators observed the conditions of the farmers' field in different aspects. Table 5.19 summarizes the observations as the percentage of farmers.

Table 5.20: Status of the farmers' fields according to direct observations by the investigator

	Percentage of farmers in each category			
	Poor	Fair	Good	Very good
1.General condition of the plantation	0	51	32	17
2.Soil conservation	15	64	5	16
3.Lopping of shade trees	0	52	29	18
4.Weed control	0	53	29	18
5. Handling of agrochemicals	1	71	12	16
6.Irrigation	20	60	4	16
7.Pest and disease control	9	71	5	16
8.Cleanliness of environment	1	53	28	18

5.9: Participation of women and youth in pepper production

One of the objective of the project is to increase participation of women and youth in household economic activities with the intervention of the project using the equipment provided. Following analysis shows the percentage of women and youth of farm families who are involve partially and fully in different activities relevant to the pepper production and marketing process. It was revealed that in majority of households, women and young generation of the families are participation either partially of totally in several activities.

Table 5.21: Percentage of involvement of women and youth in different activities of pepper cultivation.

Activity	Participation of women in selected activities (%)		Participation of youth in different activities	
	Partial	Full	Partial	Full
1. Weed control	62	18	60	10
2. Lopping shade trees	57	7	61	9
3. Fertilizer application	45	6	48	3
4. Harvesting	46	18	54	10
5. Threshing	44	35	57	11
6. Drying and processing	30	33	49	4
7. Transport and selling	40	15	53	8

5.10: Changes of different aspects due to project intervention

Farmers were questions about the changes of some of the attributes due to intervention of the project according to their views. Table 5.21 summarizes the results. Pepper land extent was increased by seven farmers and the total extent was four acres. Seventy-three farmers of the sample have filled the vacant areas of the land and the total number of pepper vines planted was 5038. Reduction of hired labour, increment of family labour use, involvement of young members in pepper cultivation and reduction of cost of production were significant achievement according to the farmers.

Table 5.22: Changes due to project intervention in selected aspects

Criteria	Number of farmers reported	Percentage of farmers reported	Size of the improvement
1. Increase of land area under pepper: (ac)	7	2	4
2. Cultivation of new plants for refilling: Number of vines	73	20	5038
3. Reduction of hired labour: Number per year	57	16	208
4. Increased use of family labour: Number of man days per year	53	15	357
5. Involvement of young members in activities: Number of members	63	18	224
6. Credit facilities taken: Rs.	0	0	0
7. Increment of harvest: Kg	9	3	650.29
8.Reduction of cost of production	167	47	-------

5.11 Satisfaction of farmers in interventions of the project

To achieve the objectives of community projects, it is important to maintain the satisfaction of the stakeholders. Therefore, the farmers were questioned about the satisfaction of farmers about different aspects of the project intervention. Table 5.22 summarizes the findings. The farmers are

happy about the ladders, knives and the bush cutters. However, many of them are not happy about the training programmes conducted through the project. Almost all are happy about the friendliness of the project staff and the social relationships developed through the project activities.

Table 5.23: Satisfaction of the farmers in selected interventions and selected aspects

Intervention / Benefit	Number of farmers	Percentage of farmers
1.Prunning knife	347	97
2.Bush cutter	350	98
3. Ladder	349	97
3. Training sessions of agronomic aspects	274	77
4.Training sessions on Entrepreneurship	245	68
5. Training sessions in record keeping	201	56
6. Establishment of processing centers	176	49
7. Prices received	130	36
8. Activities of marketing network	139	39
9. Friendliness of project staff	331	92
10. Improvement of social relationships	335	94

5.12 Changes of livelihood of the beneficiaries with the project intervention

In addition to the expected outcome of the project, it is worthy to understand the impact of the project on development of livelihood of the beneficiaries. This section analyses the changes of livelihood attributes of the beneficiaries according to their views. Results of the key informant discussions and FGDs revealed that the project objective of increasing pepper production could not achieved in the last season due to unexpected yield drop in the last year due to adverse weather. However, a significant number of farmers reported that their livelihood has been improved despite of the economic crisis and the reduction of pepper harvest. Fifty seven farmers have improved the household assets and 45 farmers improved the house through new constructions and renovations. 58 farmers reported that the harmony among family members has been improved with the collective activities and sharing the work with new equipment. Education and knowledge of the farm families, Social relationships, food consumption, family nutrition, empowerment of women, new expectations and overall happiness are other aspects reported improved by a significant number of farmers.

Table 5.24: Socio-economic changes due to project intervention according to the view of the respondents

	Number of farmers	Percentage of farmers
1.Level of household assets	57	15.9
2.Conditions of the house (roof, walls, floor, new constructions ….etc)	45	12.6
3. Facilities of the kitchen (Electric equipment….etc)	16	4.5
4. Sanitary facilities	5	1.4
5. Agricultural equipment and tools	173	48.3
6. Vehicles and transport equipment (Car, motor cycle…)	7	2.0
7. Entertainment equipment (TV, Smart phone….etc)	15	4.2
8. Harmony among the family members due to collective activities	58	16.2
9. Education and knowledge	108	30.2

10. Social relationships due to collective activities	109	30.4
11. Varity of food consumption	62	17.3
12. Family nutrition	65	18.2
13. Empowerment of women due to new activities with project	60	16.8
14. New expectations due to increasing income	67	18.7
15. Overall family happiness	115	32.1

All beneficiaries are happy about the project. However, they are expecting the intervention on market through the collecting centers and processing center at the earliest possibility.

The FGDs and key informant interviews revealed that the yield of pepper was in the last year due to prolonged rainy periods. Also it is expected comparatively high yield in this year.

6 Conclusions and Recommendations

The project is timely important and the interventions are relevant in order to improve the livelihood of pepper growing farmers in Matale district. The objectives relevant to increasing of yield and reduction of costs have been achieved at a significant level. Increasing of market price of pepper in the last year was an additional grace in order to increase farmer income.

The project has implemented effectively through existing Cooperative Rural Bank network of the Rattota MPCS. It was observed that the staff of the Rattota MPCS, Rural Banks all the supporting parties are mainly comprises of women, and they are highly enthusiastic to achieve the objectives of the project.

Although the project proposal planned to address both increasing supply of pepper through improving technology and reducing the costs of farmers and increasing demand through value addition and organized marketing, due to imbalance and delays of the implementation stage, the expected objectives of the marketing aspects could not be achieved.

The farmer support including the distribution of pruning knives, ladders and bush cutters have been completed in time and training sessions for the cultural practices have been conducted, establishment of collecting centers and processing center have not been initiated in time. Therefore, the project is lacking in a vital component in order to achieve overall objectives.

Although the distribution of pruning knives and ladders among all the farmers are rational, giving 2500 bush cutters (estimated cost 35 million) for all the farmers is an irrational decision and waste as the land sizes of many of the farmers are less than one acre. They can use the bush cutters only two three hours per year and the machines may be idle throughout the year. Also they cannot hire as everyone is having bush cutters. Therefore, some of the farmers who got bush cutters still keep idle without opening the pack. Also farmers who are having only half an acre, keeping their own bush cutter is meaningless. This mechanism could be run using the existing organization network of the project using less number of machines.

Machineries purchased for the collecting centers and processing center are remaining idle due to delays of construction work of the collecting centers and processing center. If the construction work of the processing centers further delayed, the guarantee period of the machines may be expired without starting operations.

In order to achieve overall objective of the project it is crucial to complete the marketing and value addition aspects of the project without delay. Therefore it is recommended to find alternatives to complete the rest of the work of collecting centers and processing center at the earliest possibility. One option is to completing partially completed two collecting centers using the funds allocated for the third collecting center which is not initiated. Also there shold be a well organized purchasing mechanism of fresh berries in the harvesting season as there are several long established collectors who are collecting fresh berries in the area.

In spite of absence of collecting centers and processing unit, the Rattota MPCS is willing to buy fresh berries in the coming season expecting increased production. They have already started registration of buyers of fresh berries. All of the above, completing the processing center and starting the processing and developing the value chain are crucial.

7 References

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5. New Rattota MPCS, (2021) Project Proposal, Improvement of Productivity and Quality of Pepper with Channeled Marketing and Processing for Improving Income of Pepper Growers in Rattota and Ambangangakorale of Matale District
6. SAPP (2023) Selection of a Consultancy Firm to Conduct Annual Outcome Survey of 4P Project; Improvement of Production and Quality of Pepper with channeled marketing and Processing for Improving Income of Pepper Growers in Rattota and Ambangangakorale of Matale District, ToR

Annex-1: Computing of HHAI

The Principle component analysis procedure of SPSS was used to calculate HHAI as the same method has been used in baseline survey. In order to compare the HHAI with the baseline value it is necessary to use the same procedure with same number of variables for the household assets.

Results of the SPSS procedure

KMO and Bartlett's Test

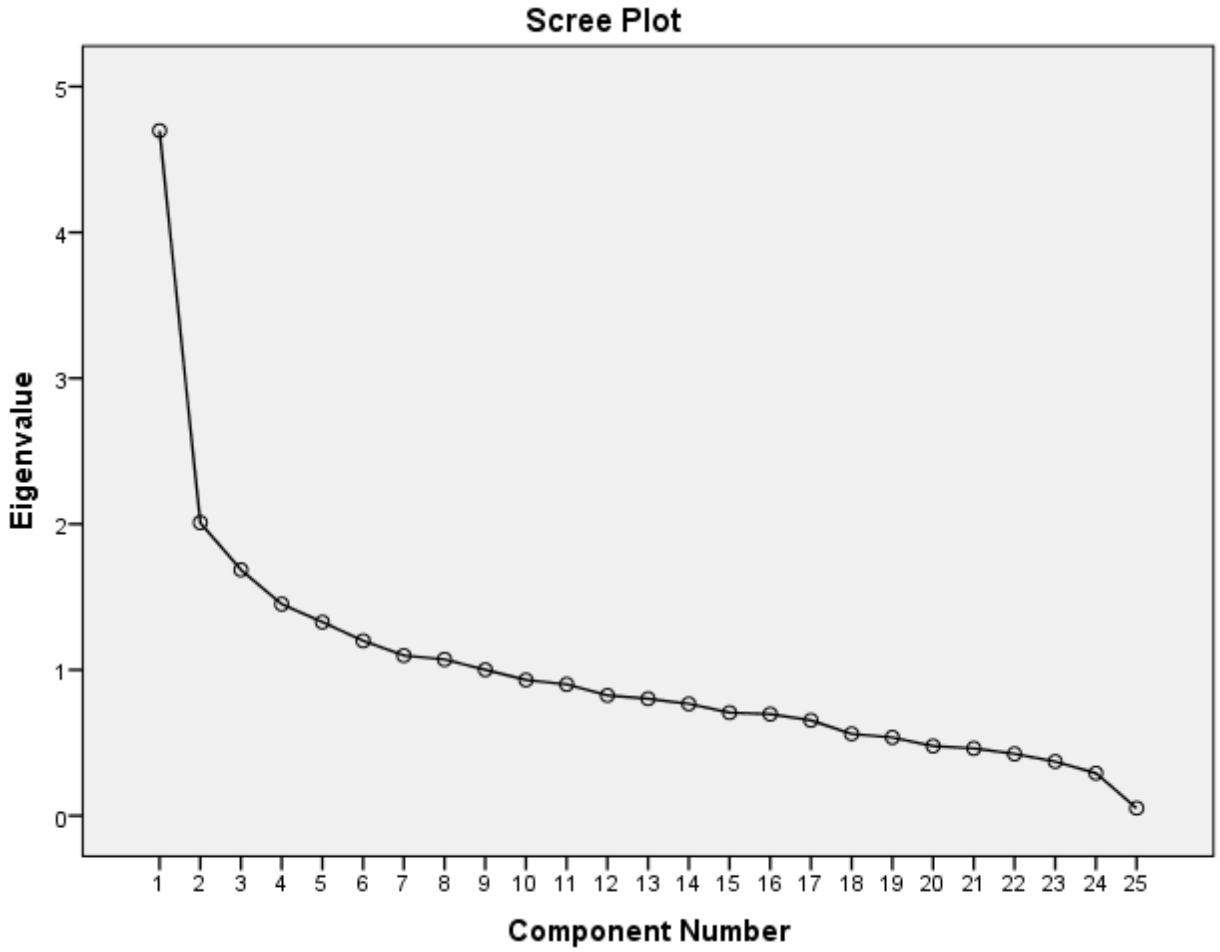
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.730
Bartlett's Test of Sphericity	Approx. Chi-Square	2411.122
	Df	300
	Sig.	.000

Communalities

	Initial	Extraction
Roof	1.000	.572
Floor	1.000	.558
Walls	1.000	.497
Home	1.000	.961
Land	1.000	.953
Water	1.000	.622
Sanitory	1.000	.603
Electricity	1.000	.504
Cooking	1.000	.596
Sprayer	1.000	.674
TV	1.000	.614
SM	1.000	.506
WM	1.000	.619
Fridge	1.000	.639
Cooker	1.000	.635
Oven	1.000	.651
Kettle	1.000	.716
Fan	1.000	.711
Telephone	1.000	.633
Computer	1.000	.525
Bicycle	1.000	.540
Mbike	1.000	.478
Twheel	1.000	.498
Car	1.000	.537
HeavyV	1.000	.699

Extraction Method: Principal Component

Analysis.



Component Matrix[a]

	Component								
	1	2	3	4	5	6	7	8	9
Roof	.205	.162	-.137	.427	-.193	.312	.014	.279	-.301
Floor	.318	.055	-.015	.253	.206	.432	-.355	-.108	-.152
Walls	.304	-.022	.389	.036	-.043	.374	.234	-.141	-.185
Home	.223	.919	.136	-.101	-.141	-.102	.042	-.064	.042
Land	.232	.908	.158	-.091	-.167	-.071	.021	-.070	.051
Water	-.103	.059	-.277	.455	-.168	-.262	.177	.398	.192
Sanitory	.580	-.121	.383	.283	-.090	.099	.079	-.020	.027
Electricity	.046	.030	-.352	-.235	.448	.127	.181	-.262	-.062
Cooking	.573	-.022	-.138	-.029	-.204	.421	-.143	-.006	.088
Sprayer	.391	-.240	.003	.214	-.056	.057	.587	-.167	.198
TV	.217	.229	-.266	-.016	.586	.033	.264	-.159	.061
SM	.646	-.084	-.177	.100	.060	-.084	-.158	.066	.018

WM	.659	-.137	-.215	.050	-.027	-.231	-.078	.132	.199
Fridge	.521	.098	-.100	.220	.411	-.244	-.266	-.027	-.006
Cooker	.449	.016	-.175	-.011	-.181	.264	-.146	-.193	.492
Oven	.619	-.186	-.004	-.152	-.216	-.278	.182	-.227	-.043
Kettle	.594	-.075	-.188	-.145	-.267	-.078	.124	-.162	-.427
Fan	.630	-.065	-.186	-.024	-.037	-.285	-.259	-.027	-.353
Telephone	.235	-.080	.605	.365	.132	-.185	-.040	-.129	.056
Computer	.509	-.131	.139	-.252	.030	.053	-.131	.087	.371
Bicycle	.413	-.087	.506	-.054	.197	-.235	.046	.026	-.074
Mbike	.455	.063	-.337	-.122	-.122	.018	.296	.179	-.063
Twheel	.307	.247	-.043	.308	.364	.080	.165	.283	.006
Car	.440	-.024	.121	-.465	.038	.049	-.098	.306	.068
HeavyV	.212	-.070	.273	-.406	.206	.166	.160	.551	-.104

Extraction Method: Principal Component Analysis.

a. 9 components extracted.

Component Transformation Matrix

Component	1	2	3	4	5	6	7	8	9
1	.669	.153	.481	.329	.255	.173	.229	.205	.005
2	-.141	.933	-.078	-.100	-.052	.183	.160	-.159	.075
3	-.315	.165	-.140	.725	.267	-.367	-.070	.133	-.315
4	-.112	-.116	-.066	.395	-.550	-.029	.514	.099	.487
5	-.209	-.207	-.136	.306	.189	.826	.013	-.283	-.057
6	-.416	-.101	.306	-.288	.146	.047	.627	.263	-.393
7	-.059	.069	-.312	-.092	.123	.265	-.187	.848	.216
8	-.096	-.073	-.109	-.097	.696	-.211	.233	-.185	.589
9	-.437	.044	.719	.072	-.043	.050	-.412	.055	.328

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.698	18.791	18.791	4.698	18.791	18.791	2.799	11.197	11.197
2	2.010	8.039	26.830	2.010	8.039	26.830	2.007	8.029	19.226
3	1.686	6.743	33.574	1.686	6.743	33.574	1.913	7.650	26.876
4	1.451	5.803	39.377	1.451	5.803	39.377	1.890	7.560	34.436

5	1.328	5.310	44.687	1.328	5.310	44.687	1.481	5.924	40.360
6	1.199	4.798	49.485	1.199	4.798	49.485	1.471	5.885	46.245
7	1.099	4.394	53.879	1.099	4.394	53.879	1.429	5.714	51.959
8	1.072	4.287	58.166	1.072	4.287	58.166	1.311	5.243	57.202
9	1.001	4.004	62.170	1.001	4.004	62.170	1.242	4.968	62.170
Extraction Method: Principal Component Analysis.									
Average value of cumulative extraction sum of squared = 42.99544									
Based on the variance of nine components the HHAI is calculated as 43%.									
• Nine components and the same number of variables were considered in order to compare the HHAI with the baseline survey.									

Annex 2: List of participants of FGDs and Key Informant Interviews

Officers and Resource Persons

1. Mr. RM Gunaratne, Regional Project Coordinator, Central Province, Smallholder Agribusinss Partnership Programme, Kandy
2. Mr. Chithrasena Vidanagamage, Regioanal Project Coordinator, Smallholder Agribusinss Partnership Programme, Keppetipola
3. Dr. MKSLD Amaratunge, Senior Lecturer, Department of Export Agriculture, Uva Wellassa University, Badulla
4. Ms. APP Disna, Director General, Department of Export Agriculture, Kandy
5. Mr. JLK Weeralal, Additional Director (development), Department of Export Agriculture, Kandy
6. Mr. Dineth Prabath Rangoda, Deputy Director (Progress Monitoring), Department of Export Agriculture, Kandy
7. Ms. Gayani Wimalagunaratne, Assistant Director (Research), Department of Export Agriculture, Kandy
8. Mr. Anura Bandara, (Retired Army Officer), Farmer Leader, Godapola, Rattota
9. Ms. GM Nadeeka, General Manager, New Rattota MPCS, Rattota
10. Ms. Kumuduni Navaratne, Accountant, New Rattota MPCS, Rattota
11. Mr. Prabath Navaratne, Chairman, New Rattota MPCS, Rattota

Farmers attended FGDs

1. Mr. UGS Samarasinghe (Farmer Leader), Nikawala, Rattota
2. MG Sunil, Kaikawala, Rattota
3. Mr. DH Gamage, Cloda Village
4. Ms. PGS Herath Menike, Kosgolla, Rattota
5. Mr. UG Dayaratne, Alakolamada
6. Mr. GH Danapala, Koswana North, Weragama

Rural Bank Managers of Rattota MPCS who coordinate the project

1. Ms. Mallika Wijewardene, Gammaduwa Rural Bank
2. Ms. Nirosha Senadeera, Kandenuwara Rural Bank
3. Ms. Ruwanthika Mallawarachchi, Pallethenna Rural Bank
4. Ms. Saranga Diwyangani, Rattota Rural Bank
5. Ms. Isuri Jeewanthi, Kumbaloluwa Rural Bank
6. Ms. Chandani Premaratne, Palleweragama Rural Bank

Farmer Leaders in clusters

1. Mr. G Robert Benedict, Gammaduwa
2. Mr. L Jayaratne, Gammaduwa
3. Ms. TGR Priyadarshani, Kandenuwara
4. Mr. Buddika Liyanage, Kandenuwara
5. Mr. M Srikanthan, Palletenna
6. Mr. RH Jayalath, Palletenna
7. Ms. RAG Dayawathi, Rattota
8. Mr. TM Kumarasinghe, Rattota
9. Ms. Nirosha Weerasooriya, Palleweragama
10. Ms. Padma Kumari Abeyratne, Palleweragama
11. Mr. SS Nimal Jayakody, Kumbaloluwa
12. Mr. DG Wijebandara, Kumbaloluwa

Annex 3: Questionaire of household survey

Questionnaire for Annual Outcome Survey of Pepper Project, Matale (February, 2024)

CONSENT:
My name is _____. We are conducting a survey with SAPP of Ministry of Agriculture (MOA). This survey will help us in planning and monitoring the impact of project activities. Your participation is voluntary. You can choose not to answer any questions, and you can stop the interview at any time. All your responses will be confidential.

Do you agree to participate in the survey? Yes / No

Date of the Interview: …….

Name of the enumerator: ……...

GPS Location: Automatically recorded.

Photograph of the respondent: To be taken

A. Information of the respondent

Q1 Name of respondent :	
Q2 Name - Head of HH (If different Q1) :	
Q3 District:	
Q4 Divisional Secretariat :	
Q Agrarian Service Division :	
Q6 ASC/ AI division :	
Q7 GN division	
Q8 Village name :	
Q9 Gender	M / F
Q 10 ID number:	
Q11 Telephone	
Q 12 Address:	
Q13 Family size	
14. Male above 18 (number)	
15 Female above 18 (number)	
16. Age of the respondent	Years:

B. Housing and Facilities

B1. Roof of the house (Code)

Cadjan	1
Straw	2
Roof Wood	3
Metal (GI) Sheets	4
Aluminum Sheets	5
Concrete	6
Asbestos	7
Clay Tile	8
Others (Specify….)	9

B2. Floor (Code)

Earth / Sand	1
Mud / Wattle & Daub	2
Cow Dung	3
Wood	4
Brick / Cement	5
Ceramic Tiles	6
Terrazzo	7
Carpet	8
Others (Specify….)	9

B3. Walls (Code)

Metal (GI) Sheet	**1**
Wattle & Daub	2
Wood / Planks	3
Cadjan	4
Pressed Soil Blocks	5
Cement Block / Stone	6
Brick / Polished Cement	7
Others (Specify….)	8

B4: Ownership of the house (Code)

Owned by household member	1
Rent / Lease / Government own	2
Occupied free of rent (e.g.: - Relatives)	3
Others (Specify….)	4

B5: Ownership of the land (Code)

Owned by household member	1
Rent / Lease / Government own	2
Occupied free of rent (e.g.: - Relatives)	3
Encroached land	4
Others (Specify….)	5

B6: Source of drinking water (Code)

Protected Spring	1
Unprotected Spring	2
Well / Borehole	3
Unprotected Well	4
Rural Water Supply Project	5
Piped Water Supply by NWSDB	6
Public Tap	7
Rainwater Collection	8
Bottled Water / Purchased Purified Water	9
Tanker, Browser, Tractor	10
Others (Specify….)	11

B7 Toilet facilities (Code)

No facility / Open Defecation	1
Latrine with Open Pit with Water	2
Improved Closed Pit Latrine with Water	3
Squatting Pan Toilets with Water Flush	4
Water Seal Toilets with Commodes Facilities	5

B8. Source of lighting

National Grid	1
Rural Hydro Power Project	2
Kerosene	3
Solar	4
Bio Gas	5
Others (Specify….)	6

B9. Energy for cooking

Firewood	1
Saw / Dust / Paddy / Husk	2
Kerosine	3
LP Gas	4
Bio Gas	5
Electricity	6

B10: Any improvement or acquisition after the project (1 Yes, 0 (No)

Item		0 / 1
1	Roof	0 / 1
2	Floor	0 / 1
3	Walls	0 / 1
4	House ownership	0 / 1
5	Land ownership	0 / 1
6	Drinking water	0 / 1
7	Toilet facilities	0 / 1
8	Lighting	0 / 1
9	Energy for cooking	0 / 1

C. Household Assets

(0 -not available, 1- for availability, 2- if available after the project)

	Livestock	
1	Buffaloes	0,1,2
2	Cattle	0,1,2
3	Poultry (Broilers)	0,1,2

4	Poultry (Layers)	0,1,2
5	Goats / Sheep	0,1,2
6	Swine (Pigs)	0,1,2
	Agricultural Equipment	
7	Sprayers (Manual)	0,1,2
8	Sprayer (Power)	0,1,2
9	Water Pumps	0,1,2
10	Seeders	0,1,2
11	Two Wheeled Tractors	0,1,2
12	Four Wheeled Tractors	0,1,2
13	Rotavators	0,1,2
14	Threshers	0,1,2
15	Combine Harvesters	0,1,2
16	Milking Machines	0,1,2
17	Other (Specify....)	0,1,2
	Household Equipment	
18	Radio / Cassette Player	0,1,2
19	Television	0,1,2
20	V.C.D / D.V. D	0,1,2
21	Sewing Machine	0,1,2
22	Washing Machine	0,1,2
23	Refrigerator	0,1,2
24	Cooker (Gas / Electric)	0,1,2
25	Oven	0,1,2
26	Electric Kettle	0,1,2
27	Blender	0,1,2
28	Electric Fans	0,1,2
29	Telephone (Domestic)	0,1,2
30	Telephone (Mobile)	0,1,2
31	Personal Computer	0,1,2
32	Camera / Video Camera	0,1,2

	Fishing Equipment	
33	Boats	0,1,2
34	Fishing Nets	0,1,2
	For Transport purpose	0,1,2
35	Bicycles	0,1,2
36	Motor Cycles / scooters	0,1,2
37	Three-wheelers	0,1,2
38	Motor Cars / Vans	0,1,2
39	Bus / Lorry / Tipper	0,1,2

D. Households Income and Expenditure

D.1

No		**Income**	
		Sources	**Monthly Ave (LKR)**
i.		Paddy Cultivation	
ii.		Plantation Crops (Tea, Rubber, Coconut, Sugarcane, etc.)	
iii.		Fruit Crops (Banana, Cashew, Lime, Mango, Orange, Papaya, Passion Fruit etc.)	
iv.		Vegetables (Tomato, Big-Onion, Red-Onion, Potato, Beans, Carrot, Cabbage, etc.)	
v.		Spice Crops (Turmeric, Chilli, Clove, Cardamom, Pepper, etc.)	
vi.		Cereal Crops (Kurakkan, Cowpea, Maize etc.)	
vii.		Other Crops	
viii.		Livestock Management (Dairy, Poultry, etc.)	
ix.		Inland Fishery	
x.		Salary (Public and Private Sector Jobs)	
xi.		Wage (Agricultural and Non-Agricultural Wage Labors)	
xii.		Self-Employment	
xiii.		Received from Foreign Employments	
xiv.		Financial Assistance / Social Welfare Benefits (Samurdhi, Elderly Payment, etc.)	
xv.		Pensions	
xvi.		Others (Not mentioned in the above) (Specify....)	

D.2

No	**Expenditure**	
	Sources	**Monthly Ave (LKR)**
i.	Food Commodities and Cooking Fuel	
ii.	Health (Medicine and Consultation of Doctors)	
iii.	Education / Training	
iv.	Household Maintenance (Electricity, Water etc.) and Rentals etc.	
v.	Cloths, Jewelry etc.	
vi.	Communication (Telephone, Mobile, Internet, etc.)	

vii.	Loan Installment Payments and Insurance etc.	
viii.	Transport / Fuel for Own Vehicles	
ix.	Alcohol, Smoking and Gambling etc.	
x.	Entertainment etc.	
xi.	Charity Work	
xii.	Investments on Agriculture, Self-Employments and Other Opportunities etc.	
xiii.	Other (Not mentioned in the above) (Specify....)	

E. Information about pepper cultivation

1. land ownership:

Own land with title	1
Jointly owned	2
Leased	3
Mortgaged	4
Ande / Tenure	5
Encroached	6
Government	7

2. Area of cultivation: ac…….

3. No of vines: …

4. Age of the plantation: Years

5. Yield per acre per year: …

6. Average yield per vine per year.

7. Application of fertilizer

No fertilizer	0
Organic fertilizer only	1
Chemical fertilizer only	2
Both organic and chemical fertilizer	3

8. Irrigation for pepper plantation:

No irrigation	0
Manual watering in dry periods	1
Sprinkler with irrigation pumps	2
Drip Irrigation without fertilizer	3
Drip Irrigation with fertilizer	4
Automated micro irrigation system	5

9. Source of irrigation water

Rain-fed only	1
Natural reservoir (river, stream, pond..)	2
Own well	3
Irrigation canals	4
Rural water supply scheme	5
Common well	6
Agro-well	7
Other (Specify)	8

10. Lopping of shade trees

Not practiced	0
Irregular and occasionally	1
Once a year	2
Twice a year	3
Trice a year	4
Other	5

11. Weed control

Not at all	0
Clean and regular intervals	1
Clean irregular intervals	2
Slashing occasional	3
Slashing regular	4
Using bush cutter	5

12. Mulching of plant base

No mulching	1
Mulching using lopping occasionally	2
Mulching using lopping regularly	3
Other mulching materials	4

13. Collecting the harvest

In baskets	1
In used bags	2
New bags purchased for the purpose	3

14. Harvesting time

Irregular harvesting time	1
Immature harvesting before 4 .5 mts	2
Immature harvesting after 4.5 mts	3
Mature harvesting after 7 mts	4

15. Labor use for harvesting

Only family labour	1
Only hired labour	2
Family labour and hired labour	3

16. Threshing

Trampling	1
Using threshers	2
Selling without threshing	3
Other	4

17. Total production of light berries in the last year:…kg

18. Total production of mature berries in the last year: kg

19. Total sale of light berries in the last year: kg

20. Total sale of mature berries in the last year: kg

21 Total sale of dried pepper in the last year: kg

22. T whom you are selling your production:

Intermediate collectors	1
Transport to the city and selling	2
Rattotta cooperative	3
A mix of methods	4

23. What are present constraints in pepper cultivation (0- not at all, 1-Some extent, 2- Serious)

	Constraint			
1	Pests and diseases	0	1	2
2	Fertilizer prices	0	1	2
3	In adequate labour	0	1	2
4	No proper extension service	0	1	2
5	Water scarcity	0	1	2
6	Absence of quality planting materials	0	1	2
7	Unstable prices	0	1	2
8	Difficulty of harvesting	0	1	2
9	Difficulty of processing (Threshing)	0	1	2
10	Difficulty in storage	0	1	2
11	Uncertain whether	0	1	2
12	Price and weight manipulation by buyers	0	1	2
13	Difficulty of maintaining quality	0	1	2
14	Other (Specify)	0	1	2

24. What is the last harvest?

1. Standard quality	Kg
2. Rejects	Kg
3. Total	Kg

25. Cost of production in the last year

1. Fertilizer and application	Rs.
2. Weed control	Rs.
3. Irrigation	Rs.
4. Pest and disease control	Rs.
5. Lopping and pruning	Rs.
6. Mulching	Rs.
7. Drying	Rs.
8. Packing and transport	Rs.
9. Other	Rs.
10. Total	Rs.

26. What is the price obtained in the last sale

1. Green pepper (good quality)	Rs.
2.Green pepper (Rejects)	Rs.
3. Dry Pepper	Rs.

27. To whom you sold your harvest in the last harvest?

1. Intermediate buyers within the village	Kg
2. Intermediate buyers outside the village	Kg
3. Cooperative Society	Kg
4. Other (specify)	Kg

28. Field direct observations by the investigator (1-very poor, 2- poor, 3-fair, 4- good, 5 very good)

1.General condition of the plantation	1	2	3	4	5
2.Soil conservation					
3.Lopping of shade trees					
4.Weed control					
5. Handling of agrochemicals					
6.Irrigation					
7.Pest and disease control					
8.Cleanliness of environment					

29. Level of women participation in selected activities (0- not at all, 1- partially, 2. Entirely)

1. Weed control	0	1	2
2. Lopping shade trees	0	1	2
3. Fertilizer application	0	1	2
4. Harvesting	0	1	2
5. Threshing	0	1	2
6. Drying and processing	0	1	2
7. Transport and selling	0	1	2

30. level of participation of youth in selected activities

1. Weed control	0	1	2
2. Lopping shade trees	0	1	2
3. Fertilizer application	0	1	2
4. Harvesting	0	1	2
5. Threshing	0	1	2
6. Drying and processing	0	1	2
7. Transport and selling	0	1	2

F. Inputs received from the project

F1. Inputs

1.Prunning knife	Number
2.Bush cutter	Number
3. Ladder	Number
4. Training on agronomic practices	Number
5. Training on harvesting	Number
6.Training on entrepreneurship	Number
7. Training of record keeping	Number
8. Access to collecting centers	0-No, 1-Yes
9. Credit facilities	0-No, 1-Yes

F2. Quality of the inputs (0- bad, 1-fair, 2- good, 4-very good)

1.Prunning knife	0	1	2	3	4
2.Bush cutter	0	1	2	3	4
3. Ladder	0	1	2	3	4

4. Training on agronomic practices	0	1	2	3	4
5. Training on harvesting	0	1	2	3	4
6.Training on entrepreneurship	0	1	2	3	4
7. Training of record keeping	0	1	2	3	4
8. Access to collecting centers	0	1	2	3	4
9. Credit facilities	0	1	2	3	4

F3. Usefulness of given inputs (0 – not useful, 1- useful in some extent, 2- Very useful)

1.Prunning knife	0	1	2
2.Bush cutter	0	1	2
3. Ladder	0	1	2
4. Training on agronomic practices	0	1	2
5. Training on harvesting	0	1	2
6.Training on entrepreneurship	0	1	2
7. Training of record keeping	0	1	2
8. Access to collecting centers	0	1	2
9. Credit facilities	0	1	2

F4. Application and adaptation to the given inputs (0- not at all, 1- at some extent, 2- Totally)

1.Prunning knife	0	1	2
2.Bush cutter	0	1	2
3. Ladder	0	1	2
4. Training on agronomic practices	0	1	2
5. Training on harvesting	0	1	2
6.Training on entrepreneurship	0	1	2
7. Training of record keeping	0	1	2
8. Access to collecting centers	0	1	2
9. Credit facilities	0	1	2

G Changes due to project intervention (Qualitative changes)

1. Increase of land area under pepper: ac
2. Cultivation of new plants for refilling: Number of vines
3. Reduction of hired labour: Number per year
4. Increased use of family labour: Number of man days per year
5. Involvement of young members in activities: Number of members
6. Credit facilities taken: Rs.
7. Increment of harvest: Kg

H. Satisfaction about different aspects of project intervention (Quantitative) (0 - Not satisfied, 1- Satisfied, 2- Highly satisfied

	Criteria	Level of satisfaction		
1	Pruning knife	0	1	2
2	Bush cutter	0	1	2
3	Ladder	0	1	2
4	Credit facilities	0	1	2
5	Training sessions of agronomic aspects	0	1	2
6	Training sessions on Entrepreneurship	0	1	2
7	Training sessions in record keeping	0	1	2
8	Establishment of processing centers	0	1	2
9	Prices received	0	1	2
10	Activities of marketing network	0	1	2
11	Friendliness of project staff	0	1	2
12	Improvement of social relationships	0	1	2

I. Changes of costs of production due to project interventions (-1 Reduced, 0-Not changed, +1-Increased)

	Criteria	Level of satisfaction		
1	Costs of fertilizer	-1	0	+1
2	Costs of weed control	-1	0	+1
3	Costs of irrigation	-1	0	+1
4	Costs of pruning shade trees	-1	0	+1
5	Costs of harvesting	-1	0	+1
6	Costs of threshing	-1	0	+1
7	Costs of drying and processing	-1	0	+1
8	Costs of packing and transport	-1	0	+1

J.Changes of income from pepper due to project intervention (-1 Reduced, 0-Not changed, +1-Increased)

	Criteria	Level of satisfaction		
1	Yield per vine	-1	0	+1
2	Yield per acre	-1	0	+1
3	Total production of green berries	-1	0	+1
4	Total production of dry pepper	-1	0	+1
5	Prices per kg	-1	0	+1
6	Use of family labour for activities of pepper production	-1	0	+1
7	Use of women labour for activities of pepper production	-1	0	+1
8	Involvement of young generation in activities of pepper production	-1	0	+1
9	Total income from pepper	-1	0	+1
10	Number of new plants	-1	0	+1

K. Changes of socio economic indicators due to project intervention(-1 Reduced, 0-Not changed, +1-Increased)

	Criteria	Level of satisfaction		
1	Level of household assets	-1	0	+1
2	Conditions of the house (roof, walls, floor, new constructions….etc)	-1	0	+1
3	Facilities of the kitchen (Electric equipment….etc)	-1	0	+1
4	Sanitary facilities	-1	0	+1
5	Agricultural equipment and tools	-1	0	+1
6	Vehicles and transport equipment (Car, motor cycle…)	-1	0	+1
7	Entertainment equipment (TV, Smart phone….etc)	-1	0	+1
8	Harmony among the family members due to collective activities	-1	0	+1
9	Education and knowledge	-1	0	+1
10	Social relationships due to collective activities	-1	0	+1
11	Varity of food consumption	-1	0	+1
12	Family nutrition	-1	0	+1
13	Empowerment of women due to new activities with project	-1	0	+1
14	New expectations due to increasing income	-1	0	+1
15	Overall family hapyness	-1	0	+1
		-1	0	+1

L: Overall satisfaction about the project;

-2 – Extremely unhappy about the project intervention
-1 – unhappy about some of the activities
0 – Indiferent
+1 – Happy about the project, but some impartments needed
+2 – Extremely happy about all the activities

M: Suggestions to improve the project benefits: .

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N: Remarks

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