**Study on Effectiveness of Livestock Development Promotional Program and Home Nutrition Garden Programs in Project Implemented Areas Sindhupalchok & Dolakha**



**Report submitted to**

**Food and Nutrition Security Enhancement Project (FANSEP)**

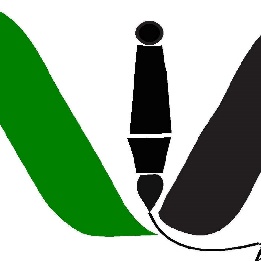
**Project Cluster Unit, Chautara, Sindhupalchok,**

**Bagmati Province, Nepal**

Submitted By

**Innovative Vision Pvt. Ltd.**

Kathmandu, Nepal

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Study on Effectiveness of Livestock Development Promotional Program and Home Nutrition Garden Programs in Project Implemented Areas Sindhupalchok & Dolakha

Activities No 22411 /FY 2079/080 BS FANSEP, Project Cluster Unit

Chautara, Sindhupalchok, Bagmati, Nepal

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# Acronyms

ADS Agriculture Development Strategy (20 Years Vision, Nepal)

AI Artificial Insemination

AKC Agriculture Knowledge Center

CBS Central Bureau of Statistics

COP Cost of Production

CSA Climate smart agriculture

CST Climate smart technologies

FANSEP Food and Nutrition Security Enhancement Project

FAO Food and Agriculture Organization (of the United Nations)

FGD Focus Group Discussion

FYM Farm Yard Manure

GAFSP Global Agriculture Food Security Program

GAP Good Agricultural Practices

GHG Greenhouse Gas

GoN Government of Nepal

Ha Hectares

HDI Human Development Index

HHs Households

IDA International Development Association

IEC Information, Education, and Communication

I/NGO International/National Government Organization

JTAs Junior Technical Assistance

LIBIRD Local Initiatives for Biodiversity, Research and Development

M&E Monitoring and Evaluation

MI Market Infrastructures

MoALD Ministry of Agriculture and Land Management

Mt/Ha Metric tons per Hectares

PCUs Project Cluster Units

PDO Project Development Objective

PICS Purdue Improved Crop Storage

PIM Project Implementation Manual

PMU Project Management Unit

PMIS Project Management Information System

PRA Participatory Rural Appraisal

RM Rural Municipality

RRN Rural Reconstruction Nepal

Rs. Rupees (Nepalese)

SP Service Provider

SWOT Strength, Weakness, Opportunity and Threats

TA Technical Assistance

UNDP United Nations Development Program

VDCs Village Development Committee

wrt with respect to

% Percentage

$ US dollar

# Executive summary

Food and Nutrition Security is one of the flagship programme in agriculture sector. The catastrophic earthquake of 2072 severely affected both Sindhupalchowk and Dolakha districts. Agriculture, the means of livelihood of these districts were completely collapsed and Government of Nepal has decided to implement a relief programme in order to revive agriculture and improve food and nutrition situation of the districts. In this context, Food and Nutrition Security Enhancement Project (FANSEP) financed by GAFSP was commenced with the signing of an agreement between Government of Nepal (GoN) and International Development Association (IDA). The Project Development Objective (PDO) of the FANSEP is to enhance climate resilience and improved agricultural productivity and nutrition practices of targeted smallholder farming communities in selected project areas of Nepal. The main objectives of the study were to assess the current production and productivity levels of livestock products and determine the marketable products specific to the local area; evaluate the adoption rate of technologies in promoting livestock activities and home nutrition gardens; identify existing marketing infrastructures and explore opportunities to establish new market centers and examine the availability of vegetable and animal protein from home nutrition gardens, including year-round production and consumption, and provide practicable suggestions for strengthening the livestock sector and developing the supply chain and market infrastructure in selected RM, with a focus on addressing the high intake of vegetable and animal sources. The major tool of the study was household interview with the close- ended questionnaire (designed by random sampling method across selected Rural Municipalities including both beneficiaries and non-beneficiaries), Focus Group Discussions (FGDs) and Key Informant Interview (KII) were adopted for data collection.

The study revealed that 37% of the respondent were male and 63% were female. The average age of the respondent was 40.8 years. Majority of the respondents were from Brahamin/Chhetri/Thakuri ethnic group and Janajati with each having 42.7% followed by Dalit (14.5%). The literacy rate were about 28.9% illiterate and 31.4% respondents had education level within primary level. About (87.7%) respondents have agriculture as the main occupation and means of livelihood. The land ownership on the women’s name was highest (33.3%) in Tamakoshi. The monthly household expense on food items was higher than other non-food and service items and majority (51.3%) of the respondent were producing agricultural products primarily for their own consumption with rare sale of less than 10% of the total products. 38.6% of the respondent were producing for their own consumption however, they were also intended to sale up to 50% of the products whereas, 7.6% of the respondent were mainly producing with the intention of selling more than 50% up to 90% with few for own consumption. Tomato, cauliflower, green leafy vegetables, peas, beans, pumpkin, etc were the major vegetable crops grown by the respondent farmers in the reference period. Majority of respondents have used improved or hybrid varieties of crops (44% respondents in Kalinchowk, 67% in Tamakoshi, 49% in Lisakhu Pakhar and 53% in Indrawati). About 37.6% respondents have 10-20% of their land cultivated with hybrid or improved varieties. The project has been successful in achieving its goal of improving the status of vegetable crops and livestock products compared to the previous year. The project adopted two pronge approaches; agriculture and livestock sensitive programme to improve the food and nutrition security situation of the community. The most significant success can be observed in Kalinchowk, where the status of vegetables, milk volume, fat percentage in milk, eggs, and diversity in nutrients home garden is greater than the previous year. Similarly, about half of respondents (52.9%) consume food from their home garden twice in Kalinchowk followed by 46.7% of households consuming food from their home garden twice in Indrawati. Similarly, farmers have reared improved goat breeds, specifically Jamunapari and Boar for their productivity. It was found that 64.6% of farmers have adopted vaccination practices for their goats.

The study findings revealed that in Tamakoshi, the major market centers were Chhaude Bazar, Kirne Bazar, and Maalukhola Bazar. There were also smaller village-centered markets such as milk collection centers (2 km from households), vegetable collection centers (4 km), and Haat bazars (7 km). In Kalinchok RM, the major market centers were Singati Bazar and Katuwachaur Bazar in Sundrawati, while Charikot Bazar and Dolakha Bazar were the main destination markets for selling agricultural and livestock products. The average distance to *Haat bazaar* was 15.3 km, and the vegetable and milk collection centers are around 5.9 km from households. However, storehouses were not conveniently located, requiring a travel distance of 38 km. In Indrawati RM, the major local markets were Nawalpur and Kotdada Bazar, while Melamchi Bazar serves as an attractive market center outside the RM. For Lisankhu Pakhar RM, Sildhunga Bazar and Sikre Bazar were the main local markets. Farmers in the study area typically sold their vegetable crops at collection centers and Haat bazars, which are at an average distance of 6.6 km. The milk collection center was approximately 5.1 km away, while the storehouse was located at a distance of 7.8 km. Majority farmers in the study area sold their produce directly to local village consumers.

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Khadichaur, Barabise Banepa, and Kalimati, Kathmandu were the major market centres for selling their products outside the respective Rural Municipalities (RM). According to the key informant, there are existing agricultural product markets, *haat bazars*, collection centers for vegetables and milk, and storage facilities for potatoes in some local areas of the RM. In summary, the prioritized and potential market infrastructures in the study RM include agricultural market centers, collection centers, cold storage facilities, goat and buck collection centers, *haat bazars*, milk collection and cold chain centers. The establishment and effective operation of these market infrastructures will contribute to the commercialization of rural agriculture and improve the livelihoods of rural farming households by enabling them to obtain better prices for their agricultural and livestock products.

The study findings indicated that there are significant challenges in the marketing of agricultural products. These challenges include weak connections between suppliers and buyers, a lack of appropriate packaging materials for fruits and vegetables, limited value-added processing, underutilization of existing collection centers and markets, farmers' lack of business mindset, high transportation costs, and unorganized market structures. To address these issues, it is recommended that local authorities should invest in establishing essential marketing infrastructure such as collection centers and warehouses. These facilities would enable farmer groups and cooperatives to store their crops, obtain better prices, and mitigate the impact of seasonal price fluctuations. It is crucial to strategically distribute these infrastructures in decentralized locations to ensure that even small and marginalized farmers in remote areas can access and benefit from them. Furthermore, when feasible, the management of these marketing infrastructures can be handed over to farmer groups or cooperatives.

# Introduction

## 1.1 Background

Food and Nutrition Security is one of the flagship programme in agriculture sector. The catastrophic earthquake of 2072 severely affected both Sindhupalchowk and Dolakha districts. Agriculture, the means of livelihood of these districts were completely collapsed and Government of Nepal has decided to implement a relief programme in order to revive agriculture and improve food and nutrition situation of the affected districts. The Food and Nutrition Security Enhancement Project (FANSEP) financed by GAFSP was commenced with the signing of an agreement between Government of Nepal and International Development Association (IDA)- acting as trustee and supervising entity of GAFSP on November 14, 2018 under grant no TF0A8013. The project is agreed to be implemented for a duration of five-year having total budget of US$ 28.7 million to US$22.7 million from GAFSP and US$ 6 million as co-financing from the GoN. The project is being implemented in eight districts of Nepal, of which four districts (Siraha, Saptari, Dhanusha, and Mahottari) are located in Madhesh province and considered as the flood hit areas, whereas three districts (Dolakha, Sindhupalchok, and Dhading) are located in Bagmati Province and 1 district (Gorkha) is located in Gandaki Province, and considered as the earthquake affected areas. MoALD has established Project Management Unit (PMU) as the lead implementing agency to oversee the implementation of the project activities, day-to-day project administration, and management is being carried out by this central unit. The Project Cluster Unit (PCUs) have been established in four districts in such a way that two districts are being supported by each PCU to oversee the implementation of the project activities in four Rural Municipality (RM). Thus, the project area will comprise of 16 RM. As per the Project Implementation Manual (PIM), the Sindhupalchok PCU will work in 4 RM of Sindhupalchok (Indrawati RM and Lisankhu Pakhar RM) and Dolakha (Kalinchok and Tamakoshi RM) districts.

The Project Development Objective (PDO) of the FANSEP is to enhance climate resilience and improved agricultural productivity and nutrition practices of targeted smallholder farming communities in selected project areas of Nepal. The project intends to increase agricultural productivity through increased adoption of climate smart technologies (CST). The heart of the project is the concept of climate resilience which is defined as the beneficiaries’ ability to withstand and recover from climatic shocks, particularly droughts and rainfall. The application of climate smart agriculture (CSA) practices as well as diversification of crop grown and additional income generation will ensure climate resilience. The project aims to deliver on CSA’s “triple-wins” through: (i) sustainable increase in productivity and farm incomes (food insecurity); (ii) enhance resilience to impacts of climate change and variability (adaptation); and (iii) reduced greenhouse gas (GHG) emissions per unit of product, and increased carbon sequestration (mitigation). This approach will help optimize the management of different CSA interventions depending on local natural resources and livelihoods systems (agriculture and livestock), take into account the external environment (developed governance structure, policies, strategic plans, regulations, markets, among others) that might influence relationship between stakeholders, and encourage inclusive stakeholder consultations (farmer groups, vulnerable and marginalized groups, service providers, input suppliers, community based organizations, and government agencies, among others) to strengthen institutional capacity and enhance service delivery. Supporting diversified diets and increased nutrition intakes and improved feeding and caring practices for pregnant and nursing women and children between 6 to 24 months will ensure the improved nutrition practices of the targeted beneficiaries of the project area.

The project’s direct beneficiaries from the selected 16 RMs, will be approximately 65000 vulnerable HHs. The primary focus of this project will thus be food insecure HHs-comprising of the small and marginal farmers, landless HHs, Dalits, indigenous and other vulnerable groups of population like infant, adolescent girl, pregnant women and young mother, and HHs severely affected by the earthquake and floods. The nutrition intervention of the project will focus HHs with young children, adolescent girls, pregnant and lactating women of “Golden 1000 Days”. The project has expected the participation of at least 65% female in project interventions.

In order to achieve the PDO, the project is seeking to address interrelated problems of food insecurity, sustainable livelihoods improvement, poverty reduction, impact of climate change, poor nutritional practices and behaviors, and associated shocks and stress through synergistic and coordinated efforts of federal, provincial, and local governments, keeping selected RMs at the center of project implementation. In overall, FANSEP has the following four components:

**Component A: Climate and Nutrition Smart Agriculture Technology Adaptation and Dissemination**; with the objective to introduce and promote climate smart and nutrition sensitive agricultural practices by availing adapted technologies, better performing plant and animal genetic resources, and capacitating farmers to master skills for improved agronomic and animal husbandry practices.

**Component B: Income Generation and Diversification**; with the objective to improve and diversify the income generating capacity of targeted beneficiaries by reducing transaction costs through investments in critical business skills and productive assets, supporting value-added activities, and building market linkages.

**Component C: Improving Nutrition Security**; with the aim to help address the underlying causes of malnutrition by making the food system responsive to these causes with the view to provide adequate, safe, diversified and nutrient-rich food.

**Component D: Project Management, Communication and M&E**; with the aim of overall management, strategic, and operational planning, implementation, monitoring and evaluation of project interventions, outcomes and impacts as well as coordination of interventions across components A, B, and C implemented by participating stakeholders and strategic partner (FAO).

**Component E: Contingency Emergency Response**; with the aim to allow for rapid reallocation of project proceeds in the event of a natural or artificial disaster or crisis that has caused or is likely to imminently cause a major adverse economic and/or social impact.

The present study primarily focused on components A, B and C and their effectiveness in achieving the project objectives. It is assumed that the findings of this study will help in planning and generating objectives of aforementioned components with the increased productivity, effective market linkages, and productive alliances at the local level. Within the scope of the assignment, the team have conducted field survey, organized FGDs, interviewed with key persons, to collect data and information relevant to the status of marketing of agricultural and livestock products from the project area to complement above analysis. The team also assess the effectiveness of livestock program service delivery and concept of vegetable home garden in improving food and nutrition status of the community.

## 1.2 Objectives of the study

1. Assess the current production and productivity levels of livestock products and determine the marketable products specific to the local area.
2. Evaluate the adoption rate of technologies in promoting livestock activities and home nutrition gardens.
3. Identify existing marketing infrastructures and explore opportunities to establish new market centers.
4. Analyze the value and supply chain situations in the livestock sector.
5. Examine the availability of vegetable and animal protein from home nutrition gardens, including year-round production and consumption, as well as the adoption rate of model home nutrition gardens.
6. Provide feasible and effective recommendations for strengthening the livestock sector and developing the supply chain and market infrastructure in each RM, with a focus on addressing the high intake of vegetable and animal sources among women and children.

## 1.3 Scope of the study

The study focuses on the status of production and productivity of the livestock products and niche specific marketable products at the local level, technologies adoption rate in livestock promotion activities and home nutrition garden, marketing infrastructures, vegetable and animal protein from home nutrition garden their year-round production and consumption and adoption rate, existing value and supply chain situation products at the Lisankhupakhar and Indrawati RM of Sindhupalchok and Kalinchok and Tamakoshi RM of Dolakha districts. The coverage of this study includes:

* To identify the status of production and productivity of the livestock products and identify the niche specific marketable products at the local level.
* To identify the technologies adoption rate in livestock promotion activities and home nutrition garden
* To identify existing key potential marketing infrastructures as well as new potential feasible centers to establish market infrastructure.
* To analyze existing value and supply chain situation.
* To identify the status of availability of vegetable and animal protein from home nutrition garden their year-round production and consumption and adoption rate of model home nutrition garden
* To recommend feasible and effective solutions for livestock sector strengthening and development of supply chain, market infrastructure in each RM based on the identified potentialities and effectiveness solution of high intake of vegetable and animal source targeting to women and children.

## 1.4 Limitations of the study

The findings and suggestions were drawn from the limited population size. This study was confined to the FANSEP, Sindhupalchowk PCU and their rural municipalities. Because of scattered project beneficiaries, the study randomly selected the respondents based on farmers owing home nutrition and livestock as a major intervention of FANSEP under the Sindhupalchok PCU. Only 124 HHs from 4 Rural Municipalities were selected as the sample unit- for the collection of data and information as a representative of the complete HHs in the study area. Key information regarding overall agriculture, livestock, home nutrition garden and marketing scenario within the rural municipalities were collected through the total of 12 Key Informant Interview (KII) with the responsible personnel of the major stakeholders and agencies. Similarly, a total of 4 Focus Group Discussion (FGD) were carried out to understand the diverse perspectives of major stakeholders in the local community in Indrawati, Lisankhu Pakhar, Kalinchok, and Tamakoshi Rural Municipalities.

# 2 Study Design and Methodology

The study particularly emphasized on the local-level production and productivity of agriculture and livestock products evaluating the effectiveness of the programs in the project area, as well as identifying marketable products tailored to specific niches. The primary methods employed for data collection were household questionnaire surveys and personal interviews. These instruments were designed using purposive sampling methods across selected Rural Municipalities. To ensure the accuracy and reliability of the data, the information gathered from various respondents was cross-referenced and validated through consultation meetings and interviews with key informants who were familiar to and had knowledgeable about the relevant sub-sectors of the study.

## 2.1 Study area

The study was conducted in the FANSEP, PCU cluster working area; Indrawati and Lisankhu Pakhar Rural Municipality of Sindhupalchok and Kalinchok, and Tamakoshi Rural Municipalities of Dolakha District.

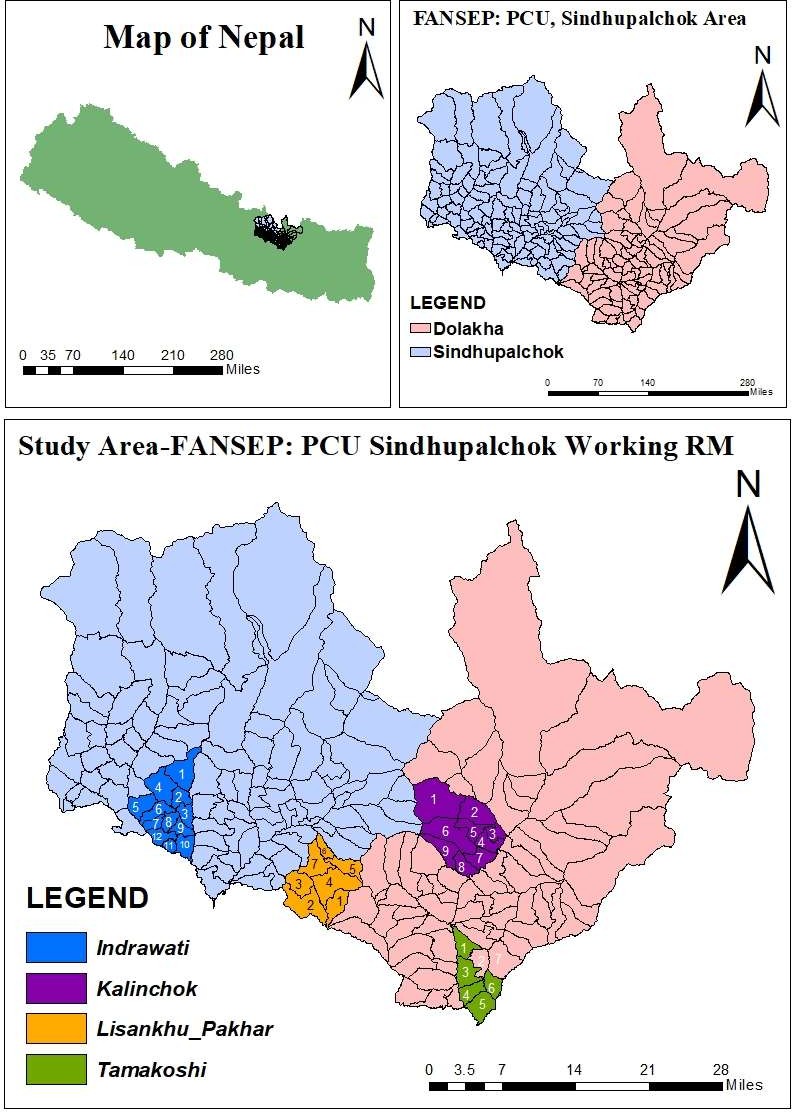


Figure 1 FANSEP Sindhupalchok PCU working districts and Rural Municipalities

### 2.1.1 Indrawati Rural Municipality

Indrawati Rural Municipality lies in Bagmati Province and was formed after the declaration of local levels by Nepal government on 22nd Falgun 2073 by merging 7 previous VDCs (Simpalkavre, Kunchock, Nawalpur, Badegaun, Shipapokhare, Bhotshipa, and Bhimtar). Geographically the topography is difficult as rural municipality bordering Panchpokhari Thangpal and Jugal Rural Municipality to north, Melamchi Municipality to west, Kavreplanchok district to south and Chautara Sangachokgadi Municipality to the east. The rural road network has touched almost all the wards however, most of the roads are earthern and fair-weather roads.

According to Population Census, 2078, The total population of the rural municipality is 25365 comprising 12183 male and 13182 female. The total number of HHs is 6780 with a population density of 241. Ethnically the rural municipality has a large population of Brahman and Chhetri (29.67%) followed by Tamang (26 %).

**Table 1: Information of Indrawati Rural Municipality**

Particulars Details

Total area 105.11 Sq. km

Cultivable land 62.28 sq. km (59.25% of total land area)

Forest area 25.93 sq. km (24.67% of total land area)

Geographic location Longitude: 850 34’ 35’’ – 850 41’ 34’’ E,

Latitude: 270 42’ 19’’ – 270 52’ 03’’ N

Climate Tropical, sub-tropical and temperate

Major River Indrawati

Altitude 654 to 2835 masl (meter above sea level)

Soil type Sandy and loam soil

Major Cereal Rice, Maize, Wheat, Millet, Barley

Pulse crops Cowpea, black bean

Oilseed crops Mustard

Vegetables Potato, Tomato, cauliflower, cabbage, Onion, chilly, etc.

Total School High School- 12, Primary school- 29, pre-school- 8

*Source: RM profile (website-homepage)*

### 2.1.2 Linsankhu Pakhar Rural Municipality

Linsankhu Pakhar Rural Municipality lies in Bagmati Province and was formed after the declaration of local levels by Nepal government on 22nd Falgun 2073 by merging 6 previous VDCs (Thulo Dhading, Lisankhu, Utterpur, Jethal and Thulopakhar). Geographically rural municipality bordering Dolakha and Ramechhap district to the east, Sunkoshi Rural Municipality to the west, Tripura Sundari Rural Municipality to the north and Kavreplanchok district and Sunkoshi Rural Municipality to the south. The rural road network has touched almost all the wards however, most of the roads are earthern and fair- weather roads.

According to Population Census, 2078, The total population of the rural municipality is 11750 comprising 5706 male and 6094 female. The total number of HHs 3697 with a population density of 119. Ethnically the rural municipality has a large population of Tamang followed by Brahman and Chhetri.

**Table 2: Information of Lisankhu Pakhar Rural Municipality**

Particulars Details `

Total area 99 sq. km

Agriculture land 3678 Ha

Climate Sub-tropical and temperate

Major River Pakharkhola, Sunkoshi, Chhaudikhola

Altitude 938 m- 2651 m

Soil type Sandy and loamy soil

Major Cereals crops Rice, Maize, wheat, Buckwheat, Millet

Pulse crops Bean, Black bean, Cowpea

Oilseed crops Mustard

Vegetables Potato, cauliflower, radish, Beans, onion, garlic,

Broadleaf mustard

Total School Primary -17, higher -7,

Campus 1

*Source: RM profile (website-homepage)*

### 2.1.3 Kalinchok Rural Municipality

Kalinchok Rural Municipality got its name from the religious temple called Kalinchok Bhagwati. Kalinchok Rural Municipality lies in Bagmati Province and was formed after the declaration of local levels by Nepal government on 22nd Falgun 2073 by merging 6 previous VDCs (Kalinchok, Lapilang, Babare, Sunkhani, Lamidanda and Sundrawati). Geographically rural municipality bordering Gaurishankar Rural Municipality to the east, Sindhupalchok district to the west, Bigu Rural Municipality to the north and Bhimeshwor Municipality to the south.

According to Population Census, 2078, The total population of the rural municipality is 21097 comprising 10269 male and 10826 female. The total number of HHs is 6151 with a population density of 159. Ethnically the rural municipality has a large population of Brahman, Chhetri followed by Thami community.

**Table 3: Information of Kalinchok Rural Municipality**

Particulars Descriptions

Total area 132.49 sq. km

Climate Sub-tropical and temperate

Major River Tamakoshi

Soil type Sandy and loamy soil

Major Cereals crops Rice, Maize, wheat, Buckwheat, Millet

Pulse crops Bean, Black bean, Cowpea

Oilseed crops Mustard

Vegetables Potato, cauliflower, radish, Beans, onion, garlic,

Broadleaf mustard,

Major livestock Cow, Buffalo, Goat, Chicken

Agrovet 10

Major markets within RM Singati and Katuwachaur

*Source: RM profile (website-homepage)*

### 2.1.4 Tamakoshi Rural Municipality

Tamakoshi Rural Municipality lies in Bagmati province and was formed after the declaration of local levels by Nepal government on 22nd Falgun 2073 by merging 7 previous VDCs (Bhirkot, Jhule, Jafe, Maalu, Sahare, Chaymma and Hawa). Geographically rural municipality bordering Beiteshwor Rural Municipality to the north, Khimthi river and Gokulganga Rural Municipality of Ramechhap district to the south, Melung Rural Municipality to the west and Giri Municipality to the east.

According to Population Census, 2078, The total population of the rural municipality is 15163 comprising 7317 male and 7846 female. The total number of HHs is 4485 with a population density of 99. Ethnically the rural municipality has a large population of Brahman, Chhetri, followed by Sunwar, Tamang, and Dalit.

**Table 4: Information of Tamakoshi Rural Municipality**

Particulars Descriptions

Total area 153.06 sq. km

Total Agriculture land 8469 Ha

Climate Sub-tropical and temperate

Major River Tamakoshi

Population density 120/Km2

Soil type Sandy and loamy soil

Major Cereals crops Rice, Maize, wheat, Buckwheat, Millet

Pulse crops Bean, Black bean, Cowpea

Oilseed crops Mustard

Vegetables Potato, cauliflower, radish, Beans, onion, garlic,

Broadleaf mustard

Major livestock Cow, Buffalo, Goat, Chicken

Agrovet 11

Major market within RM Jafe

*Source: RM profile (website-homepage)*

## 2.2 Data collection framework

The data collection framework for this study encompassed both primary and secondary sources of data. The selection of data collection methods was based on the specific sources of data available.

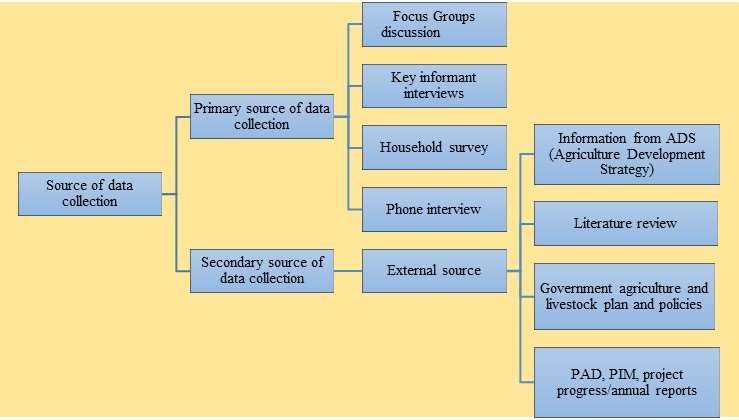
Primary data collection methods were employed to gather firsthand information directly from the target population. Household questionnaire surveys were conducted, which involved administering structured questionnaires to individuals within households. These surveys were designed to capture relevant data on the evaluation to determine the effectiveness of livestock development promotional program and home nutrition garden programs in project implemented areas Sindhupalchok & Dolakha. Personal interviews using open-ended questionnaires were also conducted, allowing for in-depth discussions and gathering of detailed information. The purposive sampling method was utilized to select the participants, ensuring that a diverse range of perspectives and experiences were represented.

On the other hand, secondary data collection methods were utilized to gather existing information from previously conducted studies, reports, and other relevant sources. These sources included official statistics, project appraisal document, project implementation manual, policy documents, study reports, published research papers, and reports from governmental and non-governmental organizations. The internet browsing and explore a relevant data from internet is also used as a secondary source of information. The secondary data provided a broader context and background information for the study, allowing for a comprehensive analysis of the subject matter.

Both primary and secondary data collection methods were focused mainly on gathering a wide range of information in order to achieve a broader understanding of the effectiveness of livestock development promotional program and home nutrition garden programs in selected project districts. The combination of these methods enabled the study team to triangulate and validate the data, ensuring the reliability and accuracy of the findings.

## 2.3 Field study:

Figure Information collection framework



Field study was employed with hybrid methods of framework where both quantitative and qualitative data were collected by using households as an assessment tool for these data collection.

* Household survey with community people (50% from the project beneficiaries receiving project support and services and 50% non- beneficiaries not receiving any project support).
* Consultation meeting, field observation, and Key Informant Interviews (KII) were conducted to triangulate and validate the information received from the field survey wherever necessary and relevant.

Household survey (sample of 124 Households) were conducted in the target areas focusing on the survey components of household and their socio-economic characteristics, land farming practices, vegetable crops and livestock production and related aspects, existing market area, marketable products, and existing marketing infrastructures, agriculture marketing, major market actors, and marketing practices adopted by the respondent farmers, support systems, and major issues or constraints in production, productivity, and marketing of the major crops and other agricultural products in the study areas.

Besides these, the nutritional status of the targeted population was assessed by using appropriate tools and techniques. The role of livestock in nutrition and effectiveness of home kitchen garden in agriculture sensitive nutrition program were also assessed during HHs survey, FGDs and KII in selected rural municipalities.

## 2.4 Sample size and Sampling frame:

The random sampling method was used to select the sample households from the FANSEP Sindhupalchok PCU working areas. Four predefined RM (two form Dolakha district and two from Sindhupalchok district) were selected as the study area. Households were selected by random sampling technique in each Rural Municipality inclusive of both project beneficiaries and non-beneficiaries from each ward of the respective RM. The table below reflects the sample size and sampling framework for the study.

**Table 5: Sampling framework and sample size**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Districts** | | Sindhupalchowk | | | | Dolakha | |  | Total |
| RM | Indrawati | | | Lisakhu Pakhar | | Kalinchowk  34 | Tamakoshi  30 | | 4 RM  124 |
| Sample | | | 30 | | 30 |

## 

## 2.5 Organization of field survey

* + - Survey questionnaire and check list for the focus group discussion and key Informant Interview were prepared as per the objective of our study and circulated for feedback and reforms to FANSEP Chautara Cluster unit team.
    - Final questionnaire and checklist were prepared as per the suggestions and feedback received from the PCU team.
    - The final set of questionnaires was translated into Nepali language for ease of both enumerator and respondents during the interview in the field.
    - The revised and finalized questionnaire was first pre-tested at Tamakoshi Rural Municipality of Dolakha district and necessary amendments were made for ease of data/information collection.
    - Enumerators were trained accordingly for 1 day before their field work in respective rural municipality to get them acquainted with the questionnaire.
    - Survey was conducted with the guidance of Team leader, direct assistance of FANSEP TA-SP team in the project districts.
    - Key informant Interview and Focus Group Discussion were conducted with the relevant stakeholders and personnel to triangulate, validate, and supplement the information received from the field survey.

## 2.6 Desk review

Main tool used in digging out the information from the project documents were desk review, revisiting existing documents including policies, strategies, rules, and regulations about agriculture and livestock sectors. The relevant line agencies such as Rural Municipality, Project staffs, Agriculture Knowledge Center (AKC), PMAMP and cooperatives were consulted as a part desk review and discussed.

The secondary sources of data were intra-project documents and all the available relevant documents and publications like PAD, PIM, progress/annual reports, review of relevant information from external sources with like-minded individuals and organizations (Governments, cooperatives). Furthermore, the study team reviewed pertinent policy documents such as the Agricultural Development Strategies (ADS), National Agriculture Policy, government plans, and commodities policies related to agriculture and livestock. Consultations were conducted with government officials, local leaders, project staff/members, and other experts to enhance the effectiveness of the research and extract pertinent information that would be valuable for the study.

## 2.7 Focus Group Discussion

A total of 4 FGDs were done in the project districts to know the details and triangulate the information collected from survey. About 7-10 participants from diverse groups of both men and women form different socio-economic, farmers groups and cooperatives were included. Conducive and friendly environment had been created to allow the participants to share and discuss the issues, ideas and experiences without any hesitation and in the freely manner. FGDs were confined on identify the existing socio-economic conditions of the farmers, problem, issue and challenge of the farming, market structure in the community, type of irrigation system in community.

## 2.8 Key informant interview

A total of 12 Key informant interviews were conducted during the study period. Team member was involved in conducting KII in each Rural Municipality with FANSEP field staff, Rural Municipality staff, and local leaders. The purpose of the KII was to supplement, triangulate, and validate information of the household survey. Checklist prepared in advance were used during KII sessions.

## 2.9 Survey Period

The field survey including KII and FGD was conducted from June 25 to July 3, 2023. Enumerators were involved in the field survey. Field researchers in consultation with ward representatives, and in the assistance of TA-SP team were able to conduct survey in 125 HHs in the aforementioned period.

## 2.10 Training to the field researcher

A training was conducted to the field researchers on 23rd June, 2023. A session covered the introduction of FANSEP project, effective conduction of FGDs, KIIs and household questionnaire administration, ethical and safety considerations during research, and on field etiquette were conducted. Similarly mock interviews and role paly exercise were also conducted during the training.

## 2.11 Pre-testing of the Questionnaires

The pre-testing exercise was carried out with 3 farmers in Tamakoshi RM of Dolakha district on 24th June 2023. The pre-testing focused on the flow of questions, ease of understanding, level of information generated and received from the respondents, and time duration for the survey in each HHs. On an average 15-20 minutes time was used in survey in one household.

## 2.12 Analytical tools

The Excel worksheets and SPSS were used as an analytical tool. The secondary data collected from the reliable and relevant sources were directly fed into excel then tabulated and analyzed using Excel workbook. The data from the field survey after imputing in excel were cleaned by the research team for the tabulation and analysis. The research team used Excel, and SPSS for data analysis and interpretation.

# 3 Major Findings of the Study

## Findings from the household survey

## 3.1 Demographic information of the respondent households

### 3.1.1 Gender and age of respondents

The result showed that 33.3% of the respondent were male and 66.7% were female. Similarly, it was observed that the average age (years) of the respondent was lower in Indrawati (37) and all other three municipality Tamakoshi, Kalinchok and Lisankhu Pakhar have respondents with 42years of age during the reference period.

**Table 6: Age and Gender of respondent**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Indrawati | Linsankhu Pakhar | Kalinchok | Tamakoshi | Total |
| Total Respondent (N) | 30 | 30 | 34 | 30 | 124 |
| Gender |  |  |  |  |  |
| Male | 33.3% (10) | 26.7% (8) | 58.8% (20) | 26.7% (8) | 37% (46) |
| Female | 66.7% (20) | 73.3% (22) | 41.2% (14) | 73.3% (22) | 63% (78) |
| Average age | 37 | 42 | 42 | 42 | 40.8 |

*Figures in parentheses indicate number of responses recorded.*

*Source: Authors’ calculation. from Field survey 2023*

### 3.1.2 Ethnicity of the respondent households

The ethnic composition of the respondent households (HHs) is shown in the table below. Majority (42.7%) of the respondents were from Brahamin/Chhetri/Thakuri ethnic group and Janajati (42.7%) followed by Dalit (14.5 %). Among the respondent HHs, Brahmin/Chhetri/Thakuri were 79.4% in Kalinchowk followed by Tamakoshi (46.7%), Indrawati (23.3%), and Linsankhu Pakhar (16.7%). Similarly, 79% were Janajati in Linsankhu Pakhar followed by Indrawati (63.3%), Kalinchowk (20.6%) and Tamakoshi (20%). Likewise, Dalit ethnic groups were 33.3% in Tamakoshi followed by Linsankhu Pakhar and Indrawati (13.3% each) of the surveyed households in the respective RM. The result showed presence of ethnic diversity within the study RM is shown in the table below.

**Table 7: Ethnic composition of the respondent HHs (%)**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Ethnicity | | Indrawati  (30) | | Linsankhu Pakhar  (30) | | Kalinchok  (34) | | Tamakoshi  (30) | | Total | N  (124) |
| Dalit | | 13.3% | | 13.3% | | - | | 33.3% | | 14.5% | 18 |
| Janajati | 63.3% | | 79% | | 20.6% | | 20% | | 42.7% 53 | | |
| B/C/T | 23.3% | | 16.7% | | 79.4% | | 46.7% | | 42.7% 53 | | |

*Source: Authors’ calculation. from Field survey 2023*

### 3.1.3 Education status of the respondents

The education status in the respondents revealed that, 28.9% respondents were illiterate and 71.1% were literate. Out of total respondents, 31.4% of the respondents were having primary level education, 28.1% having higher secondary level and 10.7% were having secondary level of education and 0.9% respondents were having undergraduate & above level education. It was observed that the highest percentage of literate respondents are from Indrawati and most respondents (40%) were having primary level education. Most of the respondents in Kalinchowk (41.2%) were having secondary level education while most respondents in in Tamakoshi (43.3%) were illiterate.

**Table 8: Education status of the respondents**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Education level/RM** | Indrawati | Linsankhu Pakhar | Kalinchok | Tamakoshi | N |
| *Illiterate* | 13.3% | 36.7% | 20.6% | 43.3% | 28.9% |
| *Primary level (1-8)* | 40% | 43.3% | 32.4% | 16.7% | 31.4% |
| *Secondary level (9-10)* | 13.3% | 3.3% | 5.9% | 20% | 10.7% |
| *Higher-Sec Level (11-12)* | 33.3% | 13.3% | 41.2% | 20% | 28.1% |
| *Undergraduate & above* | - | 3.3% | - | - | 0.9% |
| *Avg years of schooling among literate* | 9 | 7 | 9 | 9 | 8.7 |

Figure : Distribution of the respondent as per the education status

## 3.2 Socio-economic characteristics of the respondent HHs

### 3.2.1 Major Occupation of the respondent

The majority of respondents across all four RM are engaged in agriculture as their primary occupation. Almost all respondents in Lisankhu Pakhar are engaged in agriculture sector. Similarly, respondents engaged in agriculture is reported to be more than 75% in all other RM. This indicates the significance of agriculture in the local economy and the reliance of the communities on farming, cultivating crops, and raising livestock. While a small percentage of respondents identified themselves as craftsmen and merchants, these occupations are not as prevalent as agriculture. Craftsman occupation was mentioned by approximately 1.6% of the respondents, and merchants accounted for around 3.3% of the total respondents. A notable proportion of respondents reported being daily wage workers. These individuals work on a temporary or daily basis, typically in manual labor jobs, and are paid for each day's work. The percentage of daily wage workers ranged from 6.6% to 13.3% across the locations, indicating the prevalence of this type of employment. The data shows that a relatively low percentage of individuals are employed in government positions compared to other occupations.

**Table 9: Occupation status of the respondents (%)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Occupation/RM** | **Indrawati** | **Lisankhu Pakhar** | **Kalinchok** | **Tamakoshi** | **Total** |
| Agriculture | 76.7% | 100% | 88.2% | 80% | 87.7% |
| Craftsman | 6.7% | - | - | - | 1.6% |
| Daily wage worker | 13.3% | - | 5.9% | 6.7% | 6.6% |
| Merchant | 3.3% | - | 5.9% | 3.3% | 3.3% |
| Govt job | - | - | - | 3.3% | 0.8% |

**`** *Source: Authors’ calculation. from Field survey 2023*

### 3.2.2 Land registered in women’s name

Women empowerment is a crucial aspect of societal and economic development, aiming to enhance the rights, opportunities, and well-being of women. In the context of agriculture, one key indicator of women's empowerment is the proportion of agricultural land registered in their names. This indicator reflects the extent to which women have ownership and control over land, a valuable asset in the agricultural sector. Analyzing the statistics provides insights into the progress of women empowerment in agriculture, highlighting the level of gender equality and empowerment in land ownership.

Tamakoshi and Kalinchowk RM have some progress in women's land ownership, with 33.3% and 26.7% of respondents, respectively, having land registered in the name of women. Lisankhu Pakhar region has the lowest proportion of respondents (13.3%) who have registered agricultural land in the name of women, suggesting a need for greater emphasis on women's land rights and empowerment in this area. The average land size registered in women's names is relatively smaller in Tamakoshi (2.7 ropani) compared to the other regions, indicating a potential area for improvement in terms of land allocation and women's access to larger plots of land.

**Table 10: Proportion of agricultural land in family registered in the name of the woman**

|  |  |  |  |
| --- | --- | --- | --- |
| RM |  | Land registered in women’s name  (% of HHs) | Average land size registered in women’s name (in ropani) |
| Kalinchowk | Yes  No | 26.7%  86.7% | 11.3 |
| Tamakoshi | Yes  No | 33.3 %  66.7% | 2.7 |
| Lisankhu pakhar | Yes  No | 13.3%  86.7% | 9 |
| Indrawati | Yes  No | 20%  80% | 7.9 |

### 3.2.3 Income status of the respondent households

Understanding the income distribution among respondent households is essential for evaluating the socioeconomic conditions and identifying areas for targeted interventions. The income distribution among the respondent households is shown in the table below. 16.7% of respondent households fall into income range below Rs 5000 in Indrawati. Similarly, most households 13.3% earns in the range of Rs 35,000 to Rs 50,000, and 6.7% earns above Rs 50,000 among the other RM. This indicates that there is high income inequality within the Indrawati RM. Overall, around 58% of total households earns monthly income of Rs 5,000 to Rs 20,000.

**Table 11: Income distribution of households**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Income Range/RM** | **Indrawati** | **Lisankhu Pakhar** | **Kalinchok** | **Tamakoshi** | **Total** |
| *Below Rs. 5,000* | 16.7% | - | 11.7% | 10% | 9.7% |
| *Rs. 5,000-Rs. 20,000* | 36.7% | 73.3% | 73.5% | 46.7% | 58.1% |
| *Rs. 20,000-Rs. 35,000* | 26.7% | 20% | 11.7% | 30% | 21.8% |
| *Rs 35,000- Rs 50,000* | 13.3% | 6.7% | 2.9% | 10% | 8.1% |
| *Above Rs 50,000* | 6.7% | - | - | 3.3% | 2.4% |

### 3.2.4 Expenditure status of the respondent households

The table provides an overview of the expenditure status of respondent households in different regions, focusing on various expense areas. The data highlights the expenditure amounts allocated to food consumption, education, healthcare, water & electricity, house rent, and other utilities within the households. Understanding the expenditure patterns of respondent households is crucial for assessing their financial priorities, resource allocation, and overall standard of living. Residents of Tamakoshi spends more than the other regions in of food consumption (Rs 11,917) and health care (Rs 4,777). Higher amount was spent on education sector in Kalinchowk among all four regions as shown in table below.

**Table 12: Expenditure status of households**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Expense area/RM** | **Indrawati** | **Lisankhu Pakhar** | **Kalinchok** | **Tamakoshi** | **Total** |
| Food Consumption | 9517 | 8183 | 5971 | 11917 | 8897 |
| Education | 3341 | 3711 | 4763 | 3107 | 3731 |
| Health care | 3033 | 2107 | 2079 | 4777 | 2999 |
| Water & Electricity | 590 | 148 | 366 | 278 | 346 |
| House rent | 2429 | 5500 |  | - | 3965 |
| Other utilities in HH | 2654 | 2000 | 1500 | - | 2051 |
| Total | 3594 | 3608 | 2936 | 5020 |  |

### 3.2.5 Water sources and reliable usage period for respondent households

The information on variations in water source access and availability across the regions has been collected. The data is shown in the table below. The data shows that there is no information available regarding the usage of boreholes and dug well as a water source in any of the regions. In Indrawati, 29 respondent households rely on community taps/public standpipes for water supply, while in Lisankhu Pakhar, it is 15 households, in Kalinchok, it is 30 households, and in Tamakoshi, it is 2 households. The reliable usage period for this source ranges from 5 to 12 months for some households. In Kalinchok, 2 households have access to water through plumbing inside their houses. The reliable usage period for this source is 9 to 12 months for those households. A total of 15 households rely on river/stream/canal for drinking water in Kalinchok and it is 28 households in Tamakoshi. About 73% respondents’ family in Tamakoshi are dependent on river/stream for accessing drinking water for 9-12 months during the year. Large proportion of households get drinking water from community tap, 86.7% in Indrawati and 88.2% in Kalinchowk.

**Table 13: Sources of water and reliable usage period for the respondent HHs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sources/Period/RM** | **Indrawati** | **Lisankhu Pakhar** | **Kalinchok** | **Tamakoshi** | **Total** |
| Borehole |  |  | **-** | **-** | **-** |
| *9 to 12 months* | - | - | - | - |  |
| Community tap/public standpipe | **29** | **15** | **30** | **2** | **76** |
| *1 to 4 months* | - | - | - |  |  |
| *5 to 8 months* | 10% | 3.3% | - |  | 3.4% |
| *9 to 12 months* | 86.7% | 46.7% | 88.2% | 6.7% | 61% |
| Dug well |  |  | **-** |  |  |
| *9 to 12 months* |  | - | - | - |  |
| Plumbing inside house | **-** |  | **2** |  | **2** |
| *9 to 12 months* |  | - | **5.9%** | - | **1.7%** |
| Pond/river/stream/spring/canal | **1** | **15** | **2** | **28** | **24** |
| *5 to 8 months* | - |  | - | 20% | 5.1% |
| *9 to 12 months* | 3.3% | 50% | **5.9%** | 73.3% | 15.3% |

### 3.2.6 Irrigation facilities and status in the study RM

Irrigation is one of the most important factors for increasing agriculture production and productivity. It has also crucial role in vegetable home gardening that helps in enhancing household food security and reducing poverty. The sources for the farmland irrigation differ within each locality. The study revealed that rain fed irrigation is predominantly found in all the RM. Rainfall chiefly concentrate during the rainy season and the amount of rainfall in the monsoon season constitute around 85% of the annual rainfall which was observed the most essential irrigation sources for the farming community in the study area. The major categorization of cultivated land are of two types of land; *Khet* (lowland) and *pakho* (upland). In *Khet* (lowland) there is a seasonal irrigation facility and in *pakho* (upland) only rainfed irrigation practices.

**Indrawati :**

* Rainfed irrigation is predominately found
* Major irrigations channels are not present, small irrigations infrastructure are constructed

**Lisankhu Pakhar:**

* Predominately rainfed irrigation
* Presence of small irrigation channels

**Kalinchowk:**

* Rainfed irrigation predominately found
* Some small irrigation infrastructures are being constructed

**Tamakoshi:**

* Rainfed irrigation predominately found
* Major irrigations channels are not present; small irrigations infrastructures are constructed.

**3.2.7 Livestock production and major by-products in the respondent households**

Table below shows the types and number of livestocks reported by the respondent HHs in the study areas. Total number of buffalo and cattle were grazed in Indrawati with an average size of 3.3 in Kalinchok followed by 1.8 in Indrawati RM, 1.4 in Tamakoshi RM and 0.9 in Lisankhu Pakhar. Large number of poultry were reared in Kalinchowk with an average size of around 15.5 in the respondent HHs while average rearing size was 9-11 in rest of the RM. Average farming size of goat was highest in Indrawati RM followed by Lisankhu Palhar.

**Table 14: Number of livestocks reported by the respondent HHs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Livestocks/RM** | **Indrawati** | **Lisankhu Pakhar** | **Kalinchok** | **Tamakoshi** |
| Total Number of Buffaloes and cattle | 22 | 13 | 33 | 30 |
| *Average* | 1.8 | 0.9 | 3.3 | 1.4 |
| Total Number of Poultry | 623 | 273 | 959 | 387 |
| *Average* | 31.15 | 13.6 | 43.6 | 15.5 |
| Total Number of Goats | 221 | 241 | 156 | 119 |
| *Average* | 9.6 | 8.6 | 6.8 | 4.6 |

*Source: Authors’ calculation from Field survey 2023.*

Crop production is the main agricultural activity for a majority of respondent households. The highest percentage is in Kalinchok with 27.7% of total respondents (124), followed by Tamakoshi with 22.6%. Overall, 66.9% of respondent households are engaged in crop production. A smaller percentage of households are involved in livestock rearing as their main agricultural activity. Kalinchok has the highest percentage at 4%, while other regions have lower percentages. Overall, 8.9% of respondent households are primarily engaged in livestock rearing. Some households engage in both crop production and livestock rearing as major source of income. The highest percentage is in Indrawati with 12.1%, followed by Lisankhu Pakhar with 7.3%. Overall, 24.2% of respondent households practice both crop production and livestock rearing.

Main Crop Production: Among crop-producing households, there are variations in the types of crops grown. The production of cereal crops is prominent, with the highest percentage in Kalinchok at 11.5% of total respondents (124) and Lisankhu Pakhar at 21.3%. Cash crop production is notable in Tamakoshi with 23%, and vegetable crop and tuber production are significant in Kalinchok with 9.8%.

Main Purpose of Livestock Grazing: The main purpose of livestock grazing varies among regions. Milk and manure production from cattle and buffalo are notable in Indrawati at 10% and Lisankhu Pakhar at 8.2%. Goat rearing for meat and manure is significant in Kalinchok at 14.6% and Lisankhu Pakhar at 15.5%. Poultry rearing for eggs, meat, and manure is notable in Indrawati at 5.5%.

**Table 15: Major agricultural activities of the respondent HHs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Agricultural Activities** | **Indrawati** | **Lisankhu Pakhar** | **Kalinchok** | **Tamakoshi** | **Total** |
| **Main activity of HH from economic** | **view** |  |  |  |  |
| Crop Production | 8.9% | 17% | 27.7% | 22.6% | 66.9% |
| Livestock rearing | 3.2% | - | 4% | 1.6% | 8.9% |
| Both crop and livestock | 12.1% | 7.3% | 4.8% | - | 24.2% |
| **Main crop production of HH from** | **economic view** |  |  |  |  |
| Production of cash crops | 4.1% | 2.5% | 0.8% | 23% | 30.3% |
| Production of cereal crops | 16.4% | 21.3% | 11.5% | - | 49.2% |
| Production of cereal and legumes | - | - | 4.9% | - | 4.9% |
| Production of fruits | - | - | - | 0.8% | 0.8% |
| Production of vegetable crops, tubers | 3.3% | 0.8% | 9.8% | 0.8% | 14.8% |
| **Main purpose of livestock grazing** |  |  |  |  |  |
| For milk and manure (cattle and buffalo) | 10% | 6.4% | 8.2% | 7.3% | 31.8% |
| Goat rearing for meat and manure | 11.8% | 15.5% | 14.6% | 11.8% | 53.6% |
| Poultry rearing for egg, meat and manure 5.5% | | 5.5% | 2.7% | 0.9% | 14.5% |

*Source: Authors’ calculation from Field survey 2023.*

*Cash crops: ginger, turmeric; Fruits: Kiwi, Mandarin, Sweet orange, Jackfruit, Pomegranate; Tubers: potato; vegetables: Cauliflower, cabbage, tomato, garlic, onion, etc.*

### 3.2.8 Production of vegetables and destination

The respondents in the study RM reported of cultivation of different kind of vegetables in their home nutrition garden or the available cultivable land as shown in table below. Majority of respondents reported that the major vegetables is being grown for home-consumption. Large proportion of respondents in Tamakoshi (65.5%) reported to cultivate vegetables for sale comprising 10 to 50% that ends at market.

**Table 16: Major vegetables cultivated by respondent HHs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Indrawati** |  | **Lisankhu Pakhar** | **Kalinchok** | **Tamakoshi** |
| Cauliflower |  | Cauliflower | Cauliflower | Cauliflower |
| Tomato |  | Tomato | Tomato | Tomato |
| Cabbage |  | Cabbage | Cabbage | Cabbage |
| Pumpkin |  | Pumpkin | Pumpkin | Pumpkin |
| Chilly |  | Chilly | Chilly | Chilly |
| Beans |  | Beans | Beans | Beans |
| BLM |  | BLM | BLM | BLM |
| Onion |  | Onion | Onion | Onion |
|  |  | Radish | Radish | Radish |
|  |  | Peas | Peas | Bitter gourd |
|  |  | Coriander | Coriander | Coriander |
|  |  | Cucumber | Cucumber |  |
|  |  | Brinjal | Bitter gourd |  |
|  |  |  | Carrot |  |
|  |  |  | Coriander |  |

*Source: Authors’ calculation from Field survey 2023.*

The table and graph below provide information on the main intended destinations of vegetable crop production among respondent households in different rural municipalities.

Producing primarily for own consumption (selling 10% or less): The majority of households in all regions produce vegetables primarily for their own consumption, with minimal sales. The highest percentage of households engaged in region is in Indrawati at 66.7%, followed by Lisankhu Pakhar at 58.6%, Kalinchok at 44.8%, and Tamakoshi at 34.5%. Overall, 51.3% of respondent households fall into this category.

Producing mainly for own consumption, with some sales (selling more than 10% and up to 50%): A significant portion of households in Kalinchok and Tamakoshi regions produce vegetables for their own consumption, and sold a very small portion of their harvest. The highest percentage is in Tamakoshi at 65.5%, followed by Kalinchok at 48.3%, Lisankhu Pakhar at 24.1%, and Indrawati at 23.3%. Overall, 38.6% of respondent households engage in this type of production.

Producing mainly for sale, with some own consumption (selling more than 50% and up to 90%): A small percentage of households in Indrawati, Lisankhu Pakhar, and Kalinchok regions focus on selling their vegetable crops, while also consuming a portion for their own use. The highest percentage is in Indrawati at 10%, followed by Lisankhu Pakhar and Kalinchok at 6.9% each. Overall, 7.6% of respondent households fall into this group.

Production primarily for sale (selling 90% or more): The percentage of respondents that are engaged in this type of production in Lisankhu Pakhar is 10.3%. Overall, 2.5% of respondent households engage in sale of produce (>90% sale).

These findings reveal the diverse production and marketing mechanisms adopted by respondent households regarding vegetable crop production. The majority prioritize their own consumption, while a significant portion engages in both personal consumption and sales. These insights inform strategies for enhancing local food and nutritional security, promoting market-driven agriculture, and supporting the economic well-being of respondent households.

**Table 17: Main intended destination of vegetable crop production of the respondent HHs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Main destination/RM** | **Indrawati** | **Lisankhu Pakhar** | **Kalinchok** | **Tamakoshi** | **Total** |
| Producing primarily for own consumption (selling 10% or less) | 66.7% | 58.6% | 44.8% | 34.5% | 51.3% |
| Producing mainly for own  consumption, with some sales (selling more than 10% and up to 50%) | 23.3% | 24.1% | 48.3% | 65.5% | 38.6% |
| Producing mainly for sale, with some own consumption (selling more than  50% and up to 90%) | 10% | 6.9% | 6.9% | - | 7.6% |
| Production primarily for sale (selling 90% or more) | - | 10.3% | - | - | 2.5% |

Figure 4: Final intended destination of vegetable production of the respondent HHs

## 3.3 Evaluation of programs in the locality

### 3.3.1Adoption of improved technology and practices in improving livestock

The adoption of improved technology and practices in improving livestock encompasses various interventions, including breed improvement through Artificial Insemination (AI), insurance, shed improvement, forage/fodder management, and consulting with veterinarians. These initiatives aim to enhance livestock productivity, better health, and overall management practicecs. By promoting the adoption of these improved technologies and practices, livestock farmers can benefit from increased productivity, improved genetic potential, reduced disease risks, enhanced animal welfare, and ultimately, higher profitability. Good livestock management and good veterinarian practices significantly improved the cleanliness and reduced diseases outbreak, enhanced awareness on animal husbandry and forage/fodder management in community level. The evaluation of these adoption rates can provide insights into the effectiveness of interventions and guide future strategies for sustainable livestock management and development. The lower adoption rates in using technology in project districts suggest the up-scaling of good management practices- need for targeted interventions and support to promote the adoption of improved technology and practices.

**Table 18: Adoption of improved technology and practices in improving livestock**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| RM |  | AI | Insurance | Shed improvement | Forage/fodder management | Consulting veterinarian |
| Indrawati | Yes  No  NA | 6.7%  33.3%  60% | 6.7%  33.3%  60% | 6.7%  33.3%  60% | 23.3%  16.7%  60% | 40%  -  60% |
| Lisakhu Pakhar | Yes  No  NA | 6.7%  6.7%  86.7% | 6.7%  6.7%  86.7% | 6.7%  6.7%  86.7% | 10%  3.3%  86.7% | 10%  3.3%  86.7% |
| Kalinchowk | Yes  No  NA | 3.3%  40%  56.7% | 23.3%  20%  56.7% | 40%  3.3%  56.7% | 43.3%  -  56.7% | 40%  -  60% |
| Tamakoshi | Yes  No  NA | -  3.3%  96.7% | -  6.7%  93.3% | 3.3%  3.3%  93.3% | 3.3%  3.3%  93.3% | 6.7%  -  93.3% |

Note: NA indicates not valid. It is either respondents have not responded or enumerators misses the information to fill up.

### 3.3.2 Adoption of improved technology and practices in agriculture

Adoption of improved technology and practices in agriculture has been a significant focus of the project, aiming to enhance agricultural productivity, sustainability, and overall efficiency. Improved technology and practices like use of improved seeds, protected horticulture (tunnel farming and use of IPM approaches) have been proven to be more effective than traditional methods. Use of Improved seed has been widely practiced by majority of farmers in all selected rural-municipalities. Similarly, tunnel farming is used by majority of farmers in Kalinchowk RM.

**Table 19: Adoption of improved technology and practices in agriculture**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| RM |  | Improved seeds | Tunnel farming | Use of IPM |
| Kalinchowk | Yes  No  NA | 44%  29%  26% | 52.9%  17.6%  29.4% | 26.5%  44.1%  29.4% |
| Tamakoshi | Yes  No  NA | 66.7%  3.3%  30% | 46.7%  30%  23.3% | 46.7%  30%  23.3% |
| Lisakhu Pakhar | Yes  No  NA | 40%  6.7%  53.3% | 33.3%  16.7%  50% | 6.7%  6.7%  86.7% |
| Indrawati | Yes  No  NA | 53.3%  26.7%  20% | 40%  43.3%  16.7% | 43.3%  40%  16.7% |

### 3.3.3 Proportion of land under improved seed

The proportion of land under improved seeds compared to traditional seeds are as follows:

* 13.8% of farmers have allocated less than or equal to 10% of their land for improved or hybrid seeds.
* 27.6% of farmers have allocated 10% to 30% of their land for improved or hybrid seeds.
* 6.5% of farmers have allocated 30% to 50% of their land for improved or hybrid seeds.
* 1.6% of farmers have allocated 50% to 70% of their land for improved or hybrid seeds.
* 0.8% of farmers have allocated more than 70% of their land for improved or hybrid seeds.
* 49.6% of farmers have not provided information about the proportion of land allocated for improved seeds.

This data indicates that a considerable number of farmers have made progress in adopting improved or hybrid seeds, with a range of proportions allocated for these seeds. However, there is still a significant proportion of farmers left and unreached from the technical information, suggesting the need for further data collection and evaluation. The project has made some impact in increasing the adoption of improved or hybrid seeds, although there is room for further improvement and encouragement for farmers to increase the allocation of land for these seeds to enhance agricultural productivity and yield. Even, the team also observed some spill-over effect of technology adoption on vegetable farming in adjoining community not receiving project support.

**Table 20: Proportion of land under improved or hybrid seed**

|  |  |
| --- | --- |
| Proportion of improved seed wrt traditional seeds | Farmers cultivating improved or hybrid seed |
| <=10 % | 13.8% |
| 10% to 30% | 27.6% |
| 30% to 50% | 6.5% |
| 50% to 70% | 1.6% |
| >70% | 0.8% |
| NA | 49.6% |

### 3.3.4 Status of agriculture and livestock products of previous year

The impact of project is clearly noticed and successful in achieving its goal of improving the status of vegetable crops and livestock products compared to the previous year. The table below shows the responses from different regions, indicating whether the agriculture and livestock products is lower, similar, or greater than the previous year.

The most significant intervention success can be observed in Kalinchowk, where the status of vegetables, milk volume, fat percentage in milk, eggs, and diversity in nutrients home garden is better than the previous year. However, the weight of meat produced has decreased than the previous year. In Tamakoshi, the status of fruits, vegetables, meat, milk volume, fat percentage in milk, eggs, and diversity in nutrients home garden is similar or greater than the previous year, indicating positive progress. Indrawati also shows improvement, with greater increment in vegetables, meat, milk volume, eggs, and diversity in nutrients home garden. Lisakhu Pakhar displays mixed results, with some parameters showing similar status and others showing lower status (fruits), greater status (meat produced, diversity in nutrients home garden) compared to the previous year. Overall, the project has been successful in achieving progress in terms of vegetable crops and livestock products. The intervention has positively impacted the agricultural and livestock sectors, contributing to the overall development and well-being of the communities involved.

**Table 21: Status of agriculture and livestock products**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **RM** | **Response Fruits** | **Vegetables** | **Meat** | **Milk volume** | **Fat % in milk** | **Eggs** | **Diversity in nutrients home garden** |
|  | Lower 35% | 32% | 45% | 26% | 16% | 27% | 13% |
|  | Similar 26% | 13% | 6% | 13% | 6% | 3% | 3% |
| Kalinchowk | Greater 35% | 52% | 42% | 29% | 26% | 58% | 68% |
|  | Not defined 3% | 3% | 6% | 32% | 52% | 13% | 16% |
|  | Lower 20% | 16.7% | 6.7% | - | 3.3% | 10% | 13.3% |
| Tamakoshi | Similar 33.3% | 26.7% | 36.7% | 10% | 6.7% | 23.3% | 16.7% |
|  | Greater 33.3% | 46.7% | 40% | 20% | 16.7% | 43.3% | 43.3% |
|  | Not defined 13.3% | 10% | 16.7% | 70% | 73.3% | 23.3% | 26.7% |
|  | Lower 36.7% | 13.3% | 30% | 23.3% | 16.6% | 20% | 10% |
|  | Similar 43.3% | 46.7% | 33.3% | 20% | 23.3% | 10% | 20% |
| Indrawati | Greater 16.7% | 40% | 33.3% | 16.7% | 6.7% | 63.3% | 63.3% |
|  | Not defined 3.3% | - | 3.3% | 40% | 53.3% | 6.7% | 6.7% |
|  | Lower 40% | 23.3% | 13.3% | 20% | - | -- | 16.7% |
| Lisakhu Pakhar | Similar 10% | 36.7% | 26.7% | 6.7% | 3.3% | 13.3% | 20% |
|  | Greater 10% | 30% | 30% | 3.3% | 3.3% | 6.7% | 43.3% |
|  | Not defined 40% | 10% | 30% | 70% | 93.3% | 80% | 20% |

### 3.3.5 Number of times food is consumed from home garden in a week

The nutritional and food security aspects are being assessed based on the utilization of nutrition home gardens and the frequency of consuming food from these gardens. The table below presents the proportions of households in different regions based on the number of times they consume food from their home gardens. About half of respondents (52.9%) consume food from their home garden twice in Kalinchowk followed by 46.7% of households consuming food from their home garden twice in Indrawati. These proportions indicate the frequency at which households in different regions consume food from their home gardens, thereby contributing to their nutritional and food security. The data highlights variations across regions, underscoring the importance of promoting and supporting nutrition home gardens as a means to enhance food self-sufficiency and improve overall nutrition among households.

**Table 22: No of times food is consumed from home garden in a week**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| RM | 1 time | 2 times | 3 times | 4 times | NA |
| Kalinchowk | 11.8% | 52.9% | 8.8% | - | 26.5% |
| Tamakoshi | 40% | 10% | 16.7% | 3.3% | 30% |
| Lisakhu Pakhar | 23.3% | 23.3% | - | - | 53.3% |
| Indrawati | 16.7% | 46.7% | 13.3% | 6.7% | 16.7% |

### 3.3.6 Proportion of Goat farmers who have vaccinated

The adoption of improved goat breeds, specifically Jamunapari and Boar, has brought about notable changes in the vaccination practices and mortality rates among farmers. A table comparing the proportions of vaccination adoption and the mortality rates is shown in the table below. It was found that 64.6% of farmers have adopted vaccination practices for their goats. The mortality rate of goats has decreased significantly. It might be due to vaccination against different diseases in goat. These findings emphasize the importance of promoting vaccination adoption among goat farmers to further enhance the overall productivity and profitability of goat farming.

**Table 23: Proportion of vaccination in goat and mortality rate wrt previous year**

|  |  |  |
| --- | --- | --- |
|  | Yes | No |
| Vaccination against disease | 64.6% | 35.4% |
| Mortality rate of goat decreased | 72.9% | 27.1% |

### 3.3.7 Poultry farming practices as impacted by development promotion program

The project program has had a significant impact on poultry farming, with the effectiveness of the program measured on a scale ranging from 1 to 5. This scale provides a quantitative measure of the program's influence on various aspects of poultry farming, including productivity and profitability, health and nutrition practices, disease prevention and control measures, as well as improvements in housing and infrastructure. By assessing the program's impact on these key areas, it becomes possible to evaluate the extent to which the Poultry Development Promotion Program has contributed to the overall development and enhancement of poultry farming practices. These results provide insights into the perceived effectiveness of farming practices among poultry farmers in different regions.

Tamakoshi: In terms of productivity and profitability of poultry, 10% of respondents rated the practices learnt from poultry promotion program as effective (score of 4), while 16.7% rated them as very effective (score of 5). For health, feed management, and nutrition practices, and 36.7% rated them as effective. In disease prevention and control measures, 26.7% rated them as effective. Regarding housing and infrastructure improvements, 10% rated them as effective.

Kalinchowk: For productivity and profitability of poultry, 10% of respondents rated the practices as effective, and 36.7% rated them as neutral (neither effective nor ineffective). In terms of health, feed management, and nutrition practices, 20% rated them as ineffective, and only 3.3% rated them as effective. Disease prevention and control measures were rated as effective by 6.7% and very effective response was not recorded. Housing and infrastructure improvements were rated as ineffective by 23.3% and effective by only 3.3% of respondents.

Lisankhu Pakhar: In terms of productivity and profitability of poultry, 13.3% of respondents rated the practices as very effective. Similarly, for health, feed management, and nutrition practices, 13.3% rated them as effective. Disease prevention and control measures were rated as very effective by 10% of respondents. However, round 80% of the total respondents (124) were not eligible or have not responded in Lisankhu Pakhar. So, any inferences derived from this limited data should be cautiously applied.

Indrawati: For productivity and profitability of poultry, 30% of respondents rated the practices as effective. In terms of health, feed management, and nutrition practices, 13.3% rated them as effective, and 30% rated them as very effective. Disease prevention and control measures were rated as effective by 6.7% and very effective by 20% of respondents. Housing and infrastructure improvements were rated as effective by 16.7%. Poultry development program that has proved to be very effective (response) was not recorded in Indrawati.

**Table 24: Farming practices of poultry farmers**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| RM | Scale (1 indicates Not effective at all; 5 indicates very effective) | Productivity, profitability of poultry | Health, Feed management and nutrition practices | Disease prevention and control measures | Housing and infrastructure improvements |
| Tamakoshi | 1  2  3  4  5  NA | 0  10%  10%  20%  16.7%  43.3% | 0  3.3%  10%  36.7%  -  50% | 0  3.3%  10%  36.7%  -  50% | -  3.3%  3.3%  26.7%  10%  56.7% |
| Kalinchowk | 1  2  3  4  5  NA | 10%  6.7%  36.7%  10%  -  36.7% | 3.3%  20%  36.7%  3.3%  -  36.7% | 6.7%  10%  40%  6.7%  -  36.7% | 6.7%  23.3%  26.7%  3.3%  -  40% |
| Lisankhu Pakhar | 1  2  3  4  5  NA | 3.3%  -  3.3%  -  13.3%  80% | 3.3%  -  -  3.3%  13.3%  80% | 3.3%  3.3%  -  -  10%  83.3% | 3.3%  -  -  3.3%  13.3%  80% |
| Indrawati | 1  2  3  4  5  NA | 3.3%  3.3%  16.7%  30%  -  46.7% | 6.7%  6.7%  30%  13.3%  -  43.4% | 6.7%  10%  33.3%  6.7%  -  43.3% | 10%  10%  20%  16.7%  -  43.3% |

*Note: 1 indicates not effective at all, 2 indicates not that much effective, 3 indicates neutral, 4 indicates effective and 5 indicates very effective*

## 3.4 Marketing of farm produce

### 3.4.1 Accessibility of Marketing Information channels

Access to marketing information channels plays a vital role in the success of an organization's value chain by providing real-time and relevant information on customer preferences, inputs prices, market trends, product prices, marketing margins and competitive intelligence. Effective utilization of marketing information channels enables people to gather valuable insights to align their produce, pricing, and distribution strategies with market demands. So, the ease of accessibility of farmers to different actors of value chain was reported which is presented in the table below.

**Table 25: Accessibility of farmers to marketing information channels**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| RM | Ease of accessibility | Govt. bodies | Individual farmers | NGO | Cooperatives/ Farmers’ group | Traders | Input suppliers |
| Indrawati | High  Medium  Low  NA | 26.7%  50%  13.3%  10% | 26.7%  56.7%  10%  6.7% | 33.3%  40%  16.7%  10% | 20%  60%  13.3%  6.7% | 13.3%  56.7%  20%  10% | 26.7%  50%  13.3%  10% |
| Lisakhu pakhar | High  Medium  Low  NA | 6.7%  83.3%  6.7%  3.3% | 20%  73.3%  3.3%  3.3% | 3.3%  90%  3.3%  3.3% | 36.7%  60%  -  3.3% | 33.3%  60%  3.3%  3.3% | 3.3%  26.7%  66.7%  3.3% |
| Kalinchowk | High  Medium  Low  NA | 3%  71%  12%  15% | 12%  79%  0  9% | 3%  88%  0  9% | 0  88%  6%  6% | 0  82%  3%  15% | 3%  35%  9%  53% |
| Tamakoshi | High  Medium  Low  NA | 3.3%  46.7%  3.3%  46.7% | 20%  30%  3.3%  46.7% | 16.7%  23.3%  13.3%  46.7% | 20%  30%  3.3%  46.7% | 20%  23.3%  10%  46.7% | 3.3%  43.3%  6.7%  46.7% |

**3.4.2 Average distance of Marketing Infrastructure (MI) from household (in Km)**

The distance between farmers' households and marketing infrastructure plays a significant role in determining the accessibility and efficiency of the marketing system, affecting farmers' ability to access input supplies, sell their produce, and engage in value-added activities. In this context, understanding the average distance of MI from farmers' households, measured in kilometers, is essential for assessing the effectiveness of marketing strategies, identifying gaps, and formulating targeted interventions to improve agricultural marketing systems.

**Table 26: Average distance of marketing infrastructure from households**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| RM/ MI | *Haat-bazar* | Vegetable collection center | Milk collection center | Store house |
| Tamakoshi | 7 km | 4 km | 2 km | - |
| Kalincowk | 15.3 km | 5.9 km | 5.8 km | 38 km |
| Lisakhu Pakhar | 4 km | 3 km | 4 km | 2 km |
| Indrawati | 6.5 km | 6.7 km | 5.1 km | 7.8 km |

**3.4.3 Use of Marketing channel in the region**

Agricultural produces are scattered in remote villages while consumers are concentrated in semi-urban and urban areas. Using an appropriate channel increases profit for producers/farmers and have to pay less for consumers. The longer the marketing channels, producers get less profit and consumers need to pay more for products. Different channels prevalent in the region are given below in the table below.

Indication of each code in channel used:

1-Farmer-local village consumer (Direct sale)

2-Farmers - Collection Center -consumer

3-Farmers Rural Market (*Haat Bazar)*

4-Farmer-local retailer- consumers

5-A farmer-big collector in a nearby market

6- Farmer-wholesaler cum processor/miller

7-Farmer-middleman- consumers

8-Farmer-agricultural cooperatives/firms

**Table 27: No of farmers using different marketing channels to sell their produce**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Channel used | Tamakoshi | Kalinchowk | Lisankhu Pakhar | Indrawati | Total |
| 1  2  3  4  5  8 | 10  7  1  1  -  - | 21  1  2  14  1  - | 21  1  2  2  2  2 | 18  4  4  3  -  - | 70  13  9  20  3  2 |

Similarly, the study revealed significant variations in marketing costs across different locations and channels. The cost was dependent upon the means to carry the produce to the market and distance from the field to the market. The price per kg transportation to the nearest market ranges from as low as Rs 0.5 per kg to higher Rs 5 per kg. It is essential for policymakers and market stakeholders to address these variations and implement measures to promote fair and consistent pricing practices, ensuring that farmers receive reasonable returns for their produce while keeping the marketing costs manageable and sustainable.

## 3.5 Effectiveness of training and support in facilitating technology adoption and use

` In assessing the effectiveness of training and support in facilitating technology adoption and use, a scale ranging from 1 to 5 was employed, where 1 represents not effective at all, and 5 indicates a high degree of effectiveness. This scale allows for a quantifiable measure of the impact that training and support initiatives have on the successful integration and utilization of technology in farming in the project site. By utilizing this scale, it becomes possible to objectively evaluate the effectiveness of training programs and support mechanisms in achieving their intended goals of enhancing technology adoption and promoting its efficient use.

**Table 28: Effectiveness of training and support in facilitating technology adoption and use**

|  |  |  |
| --- | --- | --- |
| **RM** | **Scale**  (1 indicates not effective at all while 5 indicates very effective) | **% of responses** |
| Kalinchowk | 1 | 5.9% |
| 2 | 2.9% |
| 3 | 23.5% |
| 4 | 23.5% |
| 5 | 8.8% |
| NA | 35.3% |
| Tamakoshi | 1 | 0 |
| 2 | 0 |
| 3 | 36.7 % |
| 4 | 30 |
| 5 | 10 |
| NA | 23.3 |
| Lisankhu Pakhar | 1 | 3.3% |
| 2 | 0 |
| 3 | 0 |
| 4 | 0 |
| 5 | 30% |
| NA | 66.7% |
| Indrawati | 1 | 0 |
| 2 | 6.7% |
| 3 | 23.3 |
| 4 | 36.7 % |
| 5 | 13.3 % |
| NA | 20 % |

## Findings from FGD and KII

## 3.6 Findings from FGD in Tamakoshi

* Source of Nutrition: The primary sources of nutrition of participants included milk, curd, eggs, vegetables, fruits, and meat. These food items are essential for a well-balanced diet and provide a variety of essential nutrients required for good health.
* Livestock: The focus group members identified several livestock breeds present in their area, including goats, poultry (such as chickens), buffaloes, and cattles. These animals play a crucial role from the nutritional perspectives and in providing meat, milk, and other by-products for both consumption and sale.
* Crops Planted: The farmers in the focus group mentioned several crops they cultivate, such as spinach, maize, millet, rice, buckwheat, and tomatoes. They followed the crop specific calendars and preferred mixed farming. These crops serve as important sources of income and contribute to local food security.
* Livestock Feed Sources: Participants discussed using Lumise and Gogan grass as sources of feed for their livestock. These grasses are known for their nutritional value and are commonly utilized to ensure the health and productivity of the animals.
* Plantation Techniques: Members mentioned employing various plantation techniques, including plastic tunnel farming and mixed cropping. These techniques help optimize land use, increase crop yield, and protect crops from adverse weather conditions.
* Agriculture Extension Services: Cooperatives are the major institution providing agriculture extension services. These organizations provide support and assistance to farmers in areas such as marketing, access to credit, and knowledge sharing.
* Improved Breed of Livestock: The participants highlighted the Boer breed of goat as an improved breed of small livestock. This breed is known for its high meat production, growth and adaptability to different environments, making it a valuable asset for farmers.
* Nearest Markets: The local hat bazar and few collection centers are the major markets. The focus group members mentioned several nearby markets, including Chaude, Manthali, Kirne, Dadagau, and Tamakoshi. These markets serve as important avenues for farmers to sell their produce and obtain essential supplies.
* Problems Related to Agriculture and Livestock: Participants expressed concerns about long market distances and issues related to pricing of agricultural products. The long marketing channels and actors involved in marketing makes less profit to farmers and receive more benefits by intermediaries and local vendors. This situation may hinder farmers' profitability and access to markets, affecting their overall income and livelihoods.
* Market Infrastructure: The poor market structure is the major bottleneck in study area. The group discussed various aspects of market infrastructure, particularly transportation and product pricing mechanism. They stressed the need for improvements in the supply chain and market infrastructure to ensure that farmers are adequately compensated for their hard work and produce.

## 3.7 FGD with the beneficiaries

The focus group discussion with the beneficiaries was conducted to evaluate the effectiveness of a program on farmers or community level. The following points were observed:

* Impact on Livelihood: The livelihood of farmers has slightly changed since the implementation of the program. While they are now self-sufficient in terms of income, their produce is not yet marketable. However, there has been an improvement in food and nutrition security situation through the introduction of various crop varieties and nutritional sensitive programs.
* Changes Observed through Program: The program has brought about significant changes in livestock management and promotion. Farmers have gained technical knowledge and ideas on disease identification and vaccination, which has helped in improving the health of their livestock. Additionally, nutrition management practices such as silage preparation, the use of Gogan grass, and vitamin tablets have been introduced and adopted by the farmers.
* Knowledge and Skills Obtained: Farmers have acquired valuable knowledge and skills in crop and livestock management through the program. They have learned about disease identification and vaccination for livestock, as well as techniques for silage preparation, the use of Gogan grass, and the administration of vitamin tablets. Furthermore, they have gained knowledge regarding house garden management, including composting and seasonal vegetable cultivation.
* Support Services access to finance: The program has provided quality services to the farmers, including training sessions and economic support in the form of loans, insurance, and other services. Regular livestock checkups have also been conducted, and technical support and training have been provided to the farmers.
* Risks and Challenges: Various risks and challenges were identified during the discussion. It was noted that subsidies often do not reach the farmers as intended. The post-harvest loss is huge because of inadequate knowledge on post-harvest management, poor handling, inadequate market and storage facilities. Additionally, transportation problems and insufficient infrastructure, such as storage units, have posed obstacles. There is also a gap in technical knowledge among farmers. However, cultural barriers were not found to be a significant issue.
* Sustainability and exit strategy: There is no clear exit strategy and who will take the responsibilities after phasing out the program. Since the program is more effective in smallholder farmers in improving livelihood and raising incomes. The participants raise the questions on the program's sustainability and ownership beyond the deadline. They believed that as long as the program continues to benefit farmers, it should be either extended or implemented as a next phase. Suggestions for ensuring sustainability included the continuity of training programs and the involvement of other organizations in providing subsidies or incentives to farmers.
* Institutional Development and Empowerment: The program has had positive effects on institutional development such as farmer’s group formation, federating it into co-operatives, empowering rural women through capacity development. It has promoted gender equality by providing equal opportunities and benefits to both male and female farmers. Decision-making processes have become more inclusive, with increased group participation. Social coverage has extended to all ethnic groups within the community. The local economy has received a boost through initiatives like the Gramin bajar. The program has also contributed to a change in consciousness and an increase in overall skill and knowledge within society.
* MI (Marketing Infrastructure): Storage units established as part of the program include the *Kamma Krishi Upaj Sankalan Kendra, Kundeswori Pasushal Tatha Masu Pasal,* and *Vagya Dudh Sankalan Kendra*. These storage units aim to facilitate the collection and distribution of agricultural produce and dairy products.

The *Kamma Krishi Upaj Sankalan Kendra* serves as a storage unit for seed storage, located in Chaunde. The *Kundeswori Pasushal Tatha Masu Pasal* is focused on meat products and is situated in Kirney. The *Vagya Dudh Sankalan Kendra* deals with milk and dairy products, also located in Kirney. The establishment of these storage units aims to provide farmers with a centralized location to store their agricultural produce and dairy products, facilitating the collection and distribution processes.

* Furthermore, the focus group discussed the existing local market infrastructure in the municipality, with details provided on the top products and the number of MI locations:

Kamma Krishi Upaj Sankalan Kendra:

Top Products: Seed Storage

MI Location: Chaunde

Number of MI in Municipality: 3

Kundeswori Pasushala Tatha Masu Pasal:

Top Products: Meat Products

MI Location: Kirney

Vagya Dudh Sankalan Kendra:

Top Products: Milk and Dairy

MI Location: Kirney

The establishment of these MI facilities and the local market infrastructure aims to create accessible platforms for farmers to sell their products and ensure the smooth functioning of the agricultural supply chain. Additionally, the discussion explored the possible reasons behind the establishment of these MI units in specific locations. Two primary reasons were identified:

* Transportation Road: The presence of transportation routes and infrastructure played a crucial role in determining the location of the MI units. Accessibility to transportation facilitates the movement of products to and from these facilities.
* Long-Distance Market: The need to reduce the distance farmers have to travel to reach major markets was another factor considered when establishing MI units. By having local market infrastructure closer to the farming communities, farmers can save time and reduce transportation costs.
* Finally, the focus group discussed the possibility of establishing new MI units in the future. One suggested nature of MI was a storage unit for vegetables. The potential location for this proposed establishment was identified as Dadagaun.

## 3.8 FGD among farmers’ group in Kalinchowk

In the focus group discussion (FGD), the following points were discussed:

* Source of nutrition: Milk, curd, egg, vegetables, fruits, meat.
* Livestock breeds: Goat, poultry, buffalo, cow.
* Crops planted: Spinach, maize, millet, rice, buckwheat, tomato.
* Livestock feed sources: Grazing and silage.
* Plantation techniques: Tunnel, mixed cropping.
* Agriculture services from organizations: Cooperatives.
* Improved breed of livestock: Boer.
* Nearest market: Charikot.
* Problems related to agriculture and livestock: Market distance, product pricing.
* Supply chain and market infrastructure improvement: Farmers should receive fair prices for their products.

Program beneficiaries:

* Changes observed through the program included disease identification and vaccination ideas for livestock and nutrition management practices.
* Knowledge and skills obtained included disease identification and vaccination ideas for livestock, silage production, vitamin tablets, compost pit, and seasonal vegetable cultivation.
* Support and services provided included quality services, training, economic support (loan, insurance, etc.), livestock checkups, and technical assistance through training and field visits.
* Risks and challenges mentioned were subsidies not reaching farmers, transportation problems, lack of technical knowledge, and cultural barriers.

Regarding sustainability and continuity:

* Opinions for programs beyond the deadline were positive, as long as they benefit farmers. Suggestions for sustainability included continuity in training, subsidies through other organizations, and infrastructure development.

In terms of empowerment and the effect on society:

* Gender equality and group participation in decision making were observed.
* Local economy boost was seen through the Gramin/*Haat bajar*.
* The program had an impact on increasing skills and knowledge, changing consciousness, and had advantages for society.

Regarding market infrastructure:

* Storage units mentioned were Dudh Sankalan Tatha Prasodhan Kendra in Katuwa Chaur, Kalinchowk-9.
* Local market mentioned was Gramin Bajar.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SN. | Market Infrastructure | Top Products | MI Location | No of MI in Municipality |
| 1. | Suvawan Krishi Sahakari Kendra | Vegetables | Kalinchowk-9 | 3 |
| 2. | Dudh Sankalan Kendra | Milk storage | Kalinchowk-7 |
| 3. | Tarkari Tatha Dudh Sankalan Kendra | Vegetables and Milk storage | Kalinchowk-3 |

**3.9 FGD with Lisakhu Pakhar**

The Farmers' Group Discussion (FGD) was conducted in Lisankhu Pakhar, Sindhupalchowk, with the following details:

* Source of nutrition: Milk, curd, egg, vegetables, fruits, meat
* Livestock species: Goat, poultry, buffalo, cow, rabbit
* Crops planted: Spinach, maize, potato, radish, buckwheat, tomato
* Livestock feed sources: Lumise and Gogan grass, silage
* Plantation techniques: Tunnel, mixed cropping
* Agriculture services from organizations: Cooperatives
* Improved breed of livestock: Boer, Jamunapari
* Nearest market: Silunga, Jethal

Problems related to agriculture and livestock: Distant market, pricing of products

* Supply chain and market infrastructure improvement: Farmers should receive fair prices for their products.

Regarding the FGD program beneficiaries:

* Effects of the program on farmers were observed in terms of livelihood, income, and food security.
* Changes observed through the program included disease identification and vaccination ideas for livestock and nutrition management practices.
* Knowledge and skills obtained by farmers included disease identification and vaccination ideas for livestock, silage production, vitamin tablets, compost pit, and seasonal vegetable cultivation.
* Support and services provided included quality services, trainings, economic support (loan, insurance, etc.), livestock checkups, and technical assistance through training and field visits.
* Risks and challenges mentioned were subsidies not reaching farmers, transportation problems, lack of technical knowledge, and no cultural barriers.
* Regarding sustainability and continuity:
* Opinions for programs beyond the deadline were positive, as long as they benefit farmers.
* Suggestions for sustainability included continuity in training, subsidies through other organizations, and infrastructure development.
* In terms of empowerment and the effect on society:
* Gender equality and group participation in decision making were observed.
* Social coverage included all ethnic groups.
* Local economy boost was seen through the Gramin/Haat bajar.
* The program had an impact on increasing skills and knowledge, changing consciousness, and had advantages for society.
* Regarding market infrastructure:
* Storage units mentioned were Sampada Krishi Utpadan Kendra.
* Local market mentioned was Gramin Bajar.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S/N. | Market Infrastructure | Top Products | MI Location | No of MI |
| 1. | Sampada Krishi utpadan Kedra | Potato | Silindhunga , Lisankhu pakhar-5 | 3 |
| 2. | Sanakisan sahakari ko sankalan Kendra | Cauliflower, potato | Lisankhu pakhar -5 |
| 3. | Sikrey sankalan Kendra | Potato | Sikrey , Lisankhu pakhar-4 |

* Possibility for new MI Establishment:

|  |  |  |
| --- | --- | --- |
| SN | Nature of MI | Possible location for establishment |
| 1 | Storage unit for vegetables | Jethal, Majgaun bajar |

## 3.10 FGD in Indrawati rural municipality

* The FGD involved 6 male members, with no female participants.
* 4 members were agriculture-dependent, while 2 were livestock-dependent.
* Key sources of nutrition for the group included milk, curd, eggs, vegetables, fruits, and meat.
* Livestock species kept by the farmers included goats, poultry, buffaloes, and cows.
* Crops planted by the group included spinach, maize, millet, rice, buckwheat, and tomatoes.
* The main source of livestock feed was Gogan grass.
* The farmers adopted plantation techniques such as tunnel farming and mixed cropping.
* Agriculture services were obtained from cooperatives.
* The group had adopted the improved breed of livestock known as Boer.
* The nearest markets for the farmers were Nawalpur, Chautara, and Melamchii.
* Agriculture and livestock-related challenges included distant markets and pricing issues.
* The farmers identified transportation, roadway development, and product pricing as areas requiring improvement in market infrastructure.
* The group emphasized the importance of farmers receiving fair prices for their products.
* The program had a slight impact on their livelihoods and resulted in improved income and food security.
* Notable changes observed through the program included disease identification and vaccination practices in livestock and improved nutrition management through the use of silage, Gogan grass, and vitamin tablets.
* The farmers gained knowledge and skills related to livestock disease identification and vaccination, as well as compost pit management and seasonal vegetable cultivation in home gardens.
* The program provided various forms of support and services, including quality services, training, economic support (loans, insurance), livestock checkups, and technical assistance through training and field visits.
* Risks and challenges identified included subsidies not reaching farmers, transportation problems, knowledge gaps in technical aspects, and no cultural barriers.
* The farmers expressed their willingness to continue participating in programs beyond the deadline as long as they benefit them. Suggestions for sustainability included continuity in training, subsidies from other organizations, and infrastructure development.
* The program was found to promote gender equality, group participation in decision-making, coverage of all ethnic groups, boost the local economy through Gramin/Haat bajar, and increase awareness and skill levels within society.
* Market infrastructure in the area included Sundaripur Dudh Udhyog Sankalan Kendra for milk storage and Nayapani Bumi Adhikar Krishi Uthpadak Krishi Samuha and Tilakeshwor Krishi Uthpadak Krishi Samhuha for milk processing and storage.
* The establishment of market infrastructure was influenced by transportation road availability and the distance to markets.
* The possibility for new market infrastructure included a storage unit for vegetables in Nawalpur.

## 3.11 KII with the government representative bodies in Indrawati

* Around 70% of the ward's population depends on agriculture and animal husbandry.
* Ward-level agriculture and livestock programs include distribution of Boer goats, a vehicle for transportation of products, and three chilling vats.
* FANSEP conducted nutritional management programs targeting pregnant women, children, and elderly people.
* Disease and water scarcity are the challenges, municipality farmers are facing.
* The municipality collaborates with the World Food Bank to provide Rs. 15 for children's lunch, in addition to Rs. 2 provided by the municipality (total Rs. 17).
* The production condition of the municipality is moderate for foodstuff.
* The municipality coordinates with other organizations such as Heifer and Recoft focusing on livelihood.
* Challenges in agriculture and livestock include diseases, water scarcity, and monkey problems in some areas.
* Future programs include conducting more agriculture and livestock programs, adding more chilling vats, and providing an Agriculture Ambulance by the municipality. Nutrition program focus groups target pregnant women, children, elderly, and women. Priority order is: Pregnant women > Children > Elderly > Women
* Awareness programs are conducted to educate pregnant women about balanced diets and malnutrition.
* Subsidies are provided for milk and egg production (5% subsidy on 1 liter of milk) and poultry for pregnant women.
* The main nutrition-related problem identified is an improper balanced diet. Malnutrition problems are observed in some places within the municipality.
* The municipality collaborates with FANSEP for nutrition management programs but does not have its own dedicated program.
* Kitchen garden practices for nutrition management include growing seasonal vegetables and using compost pits has been promoted.
* Technical officers and farmers' knowledge enhancement programs are conducted.
* The municipality aims to sustain agriculture and livestock programs, provide seeds for seasonal vegetables, and ensure fair prices in the market.
* Suggested remedies for agriculture and livestock production include watershed management, disease-free seeds, and livestock vaccination.

## 3.12 KII with the commercial farmers in Indrawati

Key Informant Interviews (KII) were conducted with leaders and commercial farmers to gather insights on the study. The following points summarize their responses and suggestions:

* Fresh Vegetable Production and Utilization: Farmers have been actively engaged in growing seasonal vegetables as part of the program. Their focus is primarily on meeting daily dietary needs and ensuring a regular supply of fresh vegetables.
* Present Situation of Resources for Agricultural Production: There have been issues with the distribution of proper seeds and fertilizers, indicating a need for improvement in the distribution process to ensure that farmers have access to high-quality inputs.
* Marketing and Price of Agricultural Products: The pricing of agricultural products has been deemed unfair by the farmers. They feel that they are not receiving adequate compensation for their produce. Additionally, the market for agricultural products is often located far away, posing challenges in terms of transportation and accessibility.
* Role of Farmers in Nutritional Management: Commercial farmers have played a significant role in nutritional management by actively growing a larger variety of seasonal vegetables. Their participation has contributed to increasing the availability and diversity of nutritious food options.
* Analysis of Market Infrastructure: The analysis revealed two key factors. First, transportation has been identified as a weakness, with farmers facing challenges in transporting their produce to markets. Second, fair pricing for farmers was recognized as an opportunity for improvement, ensuring that they receive reasonable compensation for their agricultural products.
* Suggestions for Improvement through the Program: The participants provided suggestions to enhance the current status through the program. They recommended the establishment of local markets closer to farming communities, which would reduce the distance farmers have to travel to sell their products. Additionally, improvements in transportation infrastructure were suggested to address the challenges faced in transporting agricultural produce to distant markets.
* These findings from the KII with leaders and commercial farmers highlight the importance of addressing issues related to resources, marketing, and transportation in order to improve the overall status of agricultural production. By ensuring proper distribution of quality seeds and fertilizers, establishing local markets, and improving transportation infrastructure, the program can support farmers in achieving better market access and fair pricing for their agricultural products.

**New MI Establishment Capacity:**

|  |  |  |
| --- | --- | --- |
| SN. | Nature of MI | Possible Area |
| 1 | Agriculture Market (Hatbajar) | Khutume Dada, Indrawati-3 |
| 2 | Milk Storage Unit | Aaiselukharka, Indrawati-5 |
| 3 | Storage Units | Indrawati -9 |

## 3.13 KII with the mothers and health post staff

Key Informant Interviews (KII) were conducted with mothers and staff from health posts or health centers to gather information for the study. The following points summarize their responses:

* Health Checkup Status of Children: Mothers reported that children receive health checkups on a monthly basis. Regular checkups are conducted to monitor the growth and development of the children.
* Tests or Screenings for Children at the Health Post: During visits to the health post, children undergo various tests and screenings. These include weight and height measurements to track their growth, assessments of their nutrition status, and the administration of vaccines. Additionally, vision and hearing screenings are conducted to identify any potential issues.
* Difficulties for Children's Health Checkup: Mothers did not report any significant difficulties or challenges in ensuring that their children receive regular health checkups. This suggests that the process is relatively smooth and accessible.
* Accessibility of Pregnant Women to Health Post: Pregnant women do not face difficulties in visiting the health post. They are able to access the necessary healthcare services and support without significant obstacles.
* Golden 1000 Days Approach: Under the Golden 1000 Days approach, pregnant women are provided with additional support. This includes the provision of eggs and meat during pregnancy to ensure adequate nutrition. Additionally, a financial incentive of Rs. 2000 is given to women after childbirth.

## 3.14 Value chain mapping

The agricultural value chain is defined as the whole range of goods and services necessary for an agricultural product to move from the farm to the final costumers or consumers. It involves different actors with their different functions. The figure below shows the value chain of major vegetable crops in the study areas depicting the major functions, actors, and their relationship in vegetable marketing. It was observed that value chain of the cereal crops was characterized by a largely informal sector. For smallholder farm HHs crops marketing channel are very informal and unorganized in nature in the study areas. Mostly farmers cultivate these crops for their own requirements and not for sale. In addition, farmer sell small quantity multiple times during the year based on their cash requirement. This is also the major cause in reducing the price, especially for rural farm HHs who have poor negotiation skills and ability. Rural farm HHs are not able to take advantage of higher seasonal price fluctuations as they are not able to plan their sales according to the market price as they are not in the access of efficient storage facilities within their market regime. Marginal and small farm HHs, coupled with sub-optimal crop management practices, are leading to low production and low marketable surplus. This is the key barrier that strongly limits participation of smallholder farm HHs higher up in the value chain.

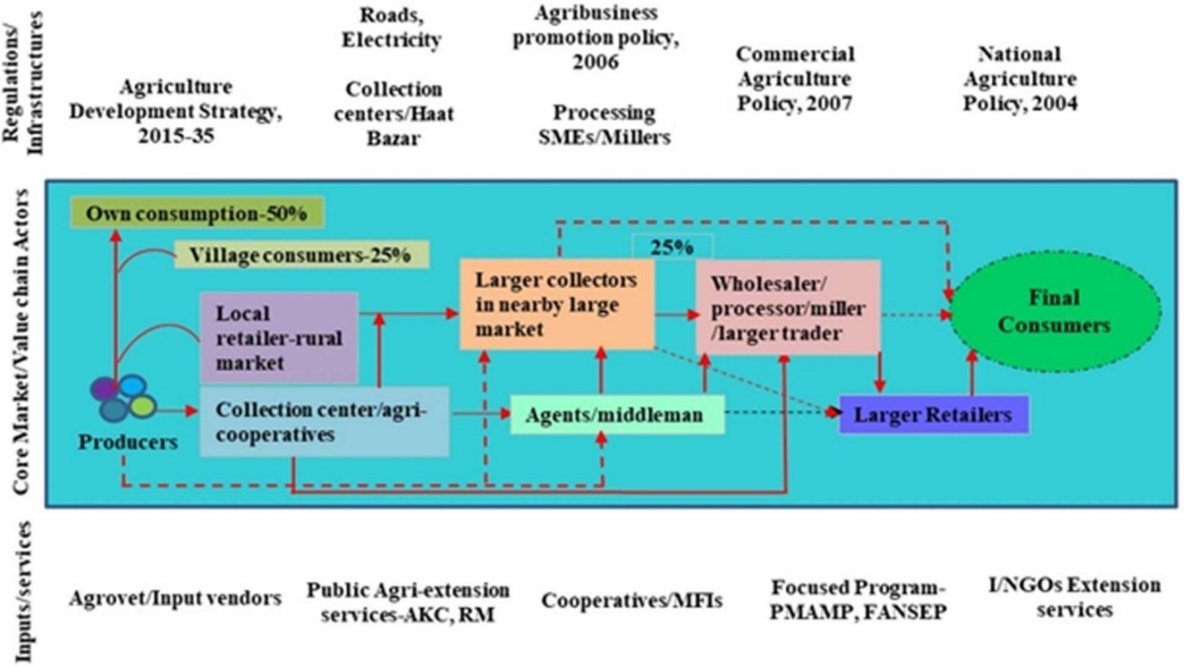


Figure 5 Value chain map in the study area

As observed from FGD and KII, majority of the farm production are consumed at the household level (50%) accompanying with the trade of products within the local village consumers (25%), and only 25% of the total products passes through the shown market channels with multiple involvement of the market actors at different levels. The enabling actors involved in the value chain process are input and service providers. Agrovets, seed producing cooperatives, public agri- extension services from AKC and RM, micro-finance institutions, special and focused program of the federal and local government, and I/NGOs extension and service delivery are the major service providers in the cereal crop value chain in the study area. They supply inputs and also provides technical assistance and advice to the farm HHs on cultivation techniques, improved seed varieties, and the use of pesticides and insecticides. The agriculture development strategy, 2015-35, agribusiness promotion policy, 2006, commercial agriculture policy, 2007, and national agriculture policy, 2004 are the major regulations and policies enabling the production of vegetable crops and livestock products. Development of sustainable roads, cold storage, collection centers, electricity, irrigation water and processing SMEs are the major infrastructures required for the creation of enabling environment in cereal crop production and marketing within or outside the RM. The major actors in the nutrition home garden and livestock value chain are:

1. Inputs supplier
2. Market service provider
3. Processing centers
4. Farmers/producers
5. Local village Consumers
6. Local retailers in rural market and collection centers
7. Agents/middleman
8. Larger collectors in nearby large market
9. Wholesaler/processor/miller/larger traders
10. Larger retailers
11. Service providers (GoS, I/NGOs, Cooperatives, Banking Institutions etc)

The major marketing practices adopted by farmers in study area are:

1.Trade to local village consumers

2.Trade to local retailer in the rural market

3.Trade to local agent/middleman

4.Trade to collection center/agriculture cooperatives

5.Trade to the larger collectors in nearby large market

6.Trade to wholesaler/processor /larger traders

7.Trade to collection centers

## 3.15 Major constraints in production and marketing of agricultural and livestock sector

The major constraints or issues in the production and marketing of the agricultural crops as per the perception and understanding of the farm HHs was observed from FGD in the study RM. Major constraints as perceived by the respondents includes: Low seed replacement, Bad Cultural Practices, uses of marginalized land cultivation and Diseases, Regular price support/policy deficit, High rate of interest for low scale farmers. Similarly, the constraints that are perceived as medium scale includes: Quality Products (Seed, Resources, Pesticides, Nutrition, Breeds, Varieties); Sanitation and Grading deficiency; Community market deficit; bargaining capacity of farmers.

**Table 29: Determinants and Constraints of Market:**

|  |  |
| --- | --- |
| Possible Determinants and Constraints | Perception (Not affected=1, Moderate affection=2, Highly Affected=3) |
| Quality Products (Seed, Resources, Pesticides, Nutrition, Breeds, Varieties) | 2 |
| Communication gap between researcher and providers | 1 |
| Low seed replacement Cost | 3 |
| Bad Cultural Practices | 3 |
| Marginalized Land cultivation and Diseases | 3 |
| Regular price support/policy deficit | 3 |
| High rate of interest for Low scale Farmers | 3 |
| Sanitation and Grading deficiency | 2 |
| Community market deficit | 2 |
| Awareness of Market Deficit | 3 |
| Bargaining Capacity of Farmers | 2 |
| Branding mechanism deficit | 3 |

## 3.16 SWOT analysis in agricultural production

SWOT (Strength, Weakness, Opportunity and Threats) analysis was compiled from the responses of participants from FGD and KII at the field level regarding the agriculture production and market situation in the study RM. Similarly, literature review and report study were carried out to gain deeper insights on this aspect. Strengths and weakness here refer to the internal factors in agriculture production and marketing situation while opportunities and threats refers to external factors in agriculture production and market situation.

**Table 30: SWOT of agricultural production**

|  |  |
| --- | --- |
| **Strength** | **Weakness** |
| **Production**   1. Climatic condition is favorable for livestock, Potato and vegetable production 2. Niche specific agriculture commodity in community (Potential for off-season vegetable production, potato, livestock production (Goat, cow and Buffalo) and cereal production) 3. Traditional knowledge and skills of farmers 4. Agriculture and livestock insurance scheme 5. Favorable climatic condition for Cereals, Potato and vegetable production 6. Niche specific agriculture commodity in community (Potential for off-season vegetable production, potato, livestock production (Goat, cow and Buffalo) and cereal production) 7. Rich in geographical and biodiversity | **Production**   1. Scale of Economy is low: Small and fragmented parcel of land holding which is less than national land holding average size (0.7ha) 2. Poor adoption of improved variety 3. Number of agro-vet is limited 4. Land degradation due to low use of organic manure (FYM, compost, green manure) in the field and high use of chemical fertilizer (Urea, DAP and Potash). 5. Lack of adequate infrastructure facilities like (irrigation facilities and storage facilities) 6. Timely unavailability of inputs (seed, fertilizer, labor, pesticides) 7. Poor adoption of improved technology. 8. Farmers not using improved practices of cultivation, harvesting and postharvest management. 9. Low access to extension services |
| **Marketing**   1. Developed good road network in rural areas 2. Presence of some collection centers and farmers groups for marketing. 3. Access to communication and market facilities 4. Farmers group and co-operative are involved in agriculture production. 5. Farmers are more aware about the domestic and near markets 6. Farmers establishing linkages with the middleman, retailers, in the local markets | **Marketing**   1. Weak backward and forward linkage. 2. Unavailability of proper packaging materials for vegetables and fruits. (Mostly used Doko) 3. Poor value addition 4. Lack of fully function of available collection center and market structure. 5. Farmers lack business orientation. 6. High porter transport cost form production area to road. 7. Most of the market and collection center is unorganized. |

|  |  |
| --- | --- |
| **Opportunities** | **Threats** |
| **Production**   1. Diversification of agriculture production (cereal, vegetable, livestock and fruit production) 2. Potential for Organic farming. 3. Different organization such as NGOs, INGOs, and CBOs are supporting farmers for agriculture production. 4. Local, province and central government are supporting production material and technical services to farmers. 5. FANSEP, PMAMP, Krishi Gyan Kendra, Co-operative are supporting farmers in agriculture production and marketing 6. Terai and KTM are the potential markets for Off-season production | **Production**   1. Climate change (Especially, drought induced productivity loss so negative impact on the overall economy). 2. Market competition (small farmer’s now facing high competition in the Charikot market (low investment so difficult to compete with the terai products in Charikot Bazar.) 3. Agriculture is in less priority of local authorities. 4. Low volume of products (Problems for distance marketing) 5. High cost of modern technology like (Drip irrigation, poly tunnel etc.) 6. High youth migration (shortage of labor force in community) 7. Competitiveness (less competitive compared to Kavre) |
| **Marketing**   1. Available of modern technology (Drip, Poly tunnel) and storage material like crates in the local market. 2. Presence of local traders/middle man in the community. 3. Working projects for marketing infrastructure 4. Supply potentials at good price for local products in the near market. 5. Increasing demand of local product in the domestic and district markets, possibility of export market to Kathmandu, Khadichaur, Manthali and Banepa. | **Marketing**   1. Existing poor marketing and infrastructural facility 2. High seasonal price variation 3. Lack of coordination between farmers and marketing actors. 4. Huge losses in transportation |

**3.17 Recommendations/ Suggestions**

Production side: There is significant untapped potential to increase crop and livestock production and productivity in the study area. The following suggestions are proposed to enhance crop and livestock production and productivity in the study area:

1. Enhancing access to improved varieties: To facilitate smallholder farmers' access to high-yielding, farmer’s preferred varieties, disease-resistant, and drought-tolerant improved crop varieties, a decentralized approach should be adopted. This can involve engaging with farmer groups and cooperatives for the multiplication and distribution of seeds. Foundation and breeder seeds of crops and parental breed of livestock can be provided by agricultural knowledge centers (AKC) and Veterinary and Livestock development center (VLDC) or focused programs initiated by the federal and local government, in coordination with research stations/centers. Additionally, the local government, AKC and VLDC can support seed-producing groups by connecting them with relevant stakeholders such as NGOs, projects, agrovets, and seed companies.
2. Capacity-building for productivity enhancement: Smallholder farmers should receive training on specific areas to enhance productivity, including the adoption of improved varieties, utilization of quality seeds, and seed treatment practices. Skill based training to develop entrepreneurship especially in rural women and youth is essential. While best management practices and good agricultural practices (GAP) exist for fertilizer application, weeding, and other crop management practices, it is important to acknowledge that smallholder farm households may initially find it challenging to adopt these practices due to cost implications. Therefore, a system-based approach suitable for both the crop and livestock sectors should be developed. This approach should also align with GAP standards to tap into future national and international trade opportunities.
3. Promotion of low-cost seed storage techniques: As seed quality significantly influences yield, promoting improved and affordable seed storage techniques is essential. Hermetic storage options like PICS bags and GrainPro bags can be promoted where feasible. However, it may not be realistic for smallholder farm households in the study area to purchase these bags, and availability may also be limited. In such cases, alternative low-cost options like jerry cans or reusable plastic containers can be encouraged for hermetic seed storage.
4. Facilitating leasehold farming: To assist resource-poor farm households who have limited land ownership, local governments and relevant agencies should facilitate leasehold farming by farmer groups or cooperatives. This approach maximizes the utilization of underutilized or fallow land, enabling marginalized landowners to increase crop production and generate marketable surpluses. Furthermore, collective marketing activities can be undertaken by these groups, fostering their participation in the market.
5. Provision of irrigation infrastructure: Given the reliance on rainfed cropping patterns and the limitations they impose on farm households, local governments should collaborate with federal and provincial governments and related agencies to provision and promote the construction of small and medium-scale irrigation infrastructure. This initiative will provide much-needed water resources to farmers, enabling them to reduce their dependency on rainfall and increase agricultural productivity. Rain water harvesting, drip, sprinkler irrigation has to be promoted or expanded to increase water use efficiency.
6. Training on crop quality parameters: Farmers should receive training on various crop quality parameters that meet market demand. This includes knowledge of clean processing methods, such as the removal of foreign matter, prevention of insect damage or physical damage, and identification of ripe or wrinkle-free grains. To facilitate adherence to these quality parameters, the local government can support farmers by providing cleaning and grading equipment.
7. Inter-governmental co-ordination among the three tiers of government is necessary in order to maintain synergy and avoid both geographical and program level duplication.
8. Implement BCC (Behavioral Change Communication) program in municipalities to increase awareness on nutrition and personal hygiene

**Marketing side**

Marketing interventions should be implemented after increasing production and marketable surplus. The following suggestions should be implemented:

1. Conduct a mapping exercise to identify and select agriculture cooperatives and farmer groups for collective marketing activities based on location, membership outreach, and relationships with buyers.
2. Promote group, co-operative marketing in community level particularly in vegetable, spices and local niche products
3. Build capacities of selected cooperatives and groups in group management, financial management, and marketing management.
4. Prioritize orientation and skill building in group management to ensure inclusivity, responsiveness, democratic decision-making, and transparency.
5. Provide accompaniment and mentoring support to cooperatives and groups during the initial years, including creating linkages with buyers and facilitating access to financial services.
6. Establish marketing infrastructures such as collection centers and warehouses to store crops and mitigate price fluctuations, with management potentially transferred to farmer groups or cooperatives.
7. Implement output-based subsidies to incentivize farmers and facilitate bulk purchases from specific areas.
8. Train Junior Technical Assistance (JTAs) in areas with agricultural potential on production-related issues, considering the challenges faced by rural and small farm households.
9. Sensitize JTAs on the barriers to accessing extension services and provide training on participatory and inclusive extension delivery.

# 4. Conclusion

This study took place in the rural municipalities of Indrawati and Lisankhu Pakhar in Sindhupalchok, and Kalinchok and Tamakoshi in Dolakha district, as part of the FANSEP project implemented by the Sindhupalchok Project Cluster Unit (PCU). The study was conducted in June and July 2023, with the primary objective of analyzing the production and productivity of home nutrition gardens, agricultural and livestock products, and the existing marketing mechanisms in place. Additionally, the study aimed to identify potential marketing infrastructures for locally produced agricultural and livestock products. A mixed-method approach was employed, combining both quantitative and qualitative surveys to gather essential information and data from the study area. Field-based surveys were conducted in 125 households, and key informant interviews were conducted with relevant personnel from the rural municipalities, market actors, and farmers' leaders. These findings were further supplemented, triangulated, and verified through focus group discussions (FGDs) to ensure data accuracy and reliability.

From FGD and KII, major market centers within Tamakoshi are *Chhaude Bazar, Kirne Bazar,* and *Maalukhola Bazar* with other small and village centered markets including milk collection center and cold storage for potato. Diverse and multiple agricultural and livestock products are observed being marketed within and outside RM by the farm HHs each RM. Vegetables, fruits, and milk were the major marketed products within the major market centers in Tamakoshi whereas farm HHs were involved in marketing of vegetables, fruits, milk, and potato in the major markets outside the RM. Major marketed products in Kalinchok were vegetables, potato, cereals, potato, and milk within the RM market centers while, vegetables, potato, and fruits were marketed outside the RM by the farm HHs. In Indrawati farm, HHs use to trade vegetables, and cereals both within and outside the RM while respondent farm HHs in Lisankhu Pakhar use to trade vegetables, potato, cereals, milk, and meat as the major agricultural and livestock products in the major market centers within and outside the RM. As observed with the responses of the farmers from FGD and KII, majority of the farm production are consumed at the household level (50%) accompanying with the trade of products within the local village consumers (25%), and only 25% of the total products passes through the shown market channels with multiple involvement of the market actors at different levels. the major marketing practices adopted in the livestock and vegetable crop value chain map are trade to local village consumers, trade to local retailer in the rural market, trade to local agent/middleman, trade to collection center/agriculture cooperatives, trade to the larger collectors in nearby large market, trade to wholesaler/processor/miller/larger traders, and trade to large retailers.

During the KII, it was suggested that the intensive use of inputs such as improved varieties, fertilizers, irrigation, plant protection measures, and labor can significantly increase the quantity and quality of vegetable crops and livestock products in the study area. However, farm households need timely and adequate access to these inputs to achieve higher income with lower production costs. Special programs from the federal and local government should consider these factors to promote self-sufficiency in crop production. Farm households in the study area identified lack of collective marketing as a major issue in the agricultural sector. Insufficient market information, limited bargaining power of producers, and a lack of branding mechanisms hindered effective marketing of agricultural crops. It is highly recommended that relevant agencies implement farmer-friendly programs that emphasize the participation of smallholder farm households in both production and marketing. This will enhance the production, productivity, and benefit-cost ratio of agricultural crops.

To enhance production and productivity in the crop and livestock sector, several recommendations were made. These include easy access to improved seeds/varieties, skill development in productivity enhancement areas, promotion of low-cost seed storage techniques, facilitation of leasehold farming, construction of irrigation infrastructures, capacity building of frontline extension workers, and implementation of participatory training methodologies. From a marketing perspective, the recommendations include mapping agriculture cooperatives and farmer groups for collective marketing, capacity building of these groups for collective farming, skill development in group management, strong mentoring and support from local government and concerned agencies, establishment of necessary marketing infrastructures, implementation of output-based subsidies, and recognition of Junior Technical Assistants (JTAs) as extension advisors at the local level.

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# Annexes

## Team composition for the study

SN Designation Qualification Role and Responsibilities

|  |  |  |  |
| --- | --- | --- | --- |
| **1** | Agriculture Expert (Task  Team Lead) | M. Sc. Agriculture | Overall management of the assignment and functioning. Training to the enumerators, deployment and monitoring and supervision of the field survey. |
| **2** | Agriculture Expert (Research Lead) | M. Sc. Agricultural Economics | Preparation of survey tools, desk review, provide technical guidance to TL in managing study and online supervision of the survey data status, data cleaning, tabulation, analysis and report preparation. |
| **3** | Subordinate team (Field  researchers) | B. Sc. Agriculture | Pre-testing of survey tools, conduct HH survey, FGD, KII and data collection, assist in data cleaning. |

## List of related stakeholders/personnel communicated for KII during study

**Dolakha , Kalinchowk**

|  |  |  |  |
| --- | --- | --- | --- |
| S.N | Name of Participants / Chairperson | Ward No | Contact Number |
| 1. | Ram Pandey | 7 | 9844146718 |
| 2. | Surya Bahadur Aacharya | 8 | 9844427622 |
| 3. | Ram Prasad Mainali | 9 | 986062161 |

**Dolakha, Tamakoshi**

|  |  |  |  |
| --- | --- | --- | --- |
| S.N | Name of Participants / Chairperson | Ward no | Contact Number |
| 1. | Ram Prasad Kafle | 3 | 9851149083 |
| 2. | Narayan Khadka | 4 | 9851124462 |
| 3. | Sambhu Prasad Fuyal | 5 | 9851204854 |

**Sindhupalchowk, Indrawati**

|  |  |  |  |
| --- | --- | --- | --- |
| S.N | Name of Participants / Chairperson | Ward No. | Conatct Number |
| 1. | Baburam Lama | 9 | 9869413076 |
| 2. | Bhimsen Thapa | 3 | 9867051104 |
| 3. | Jhakanath Nepal | 5 | 9849990500 |

**Sindhupalchowk, Lisankhu Pakhar**

|  |  |  |  |
| --- | --- | --- | --- |
| S.N | Name of Participants / Chairperson | Ward No. | Contact Number |
| 1. | Tilak Bahadur Shrestha | 5 | 9849471333 |
| 2. | Dan Bahadur Lama | 6 | 9869123399 |
| 3. | Jaya Devi Khadka | 7 | 9849269498 |

# Some glimpses of study

**Focus Group Discussion**

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**KII in the study site**

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**Minuting of participants**

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| --- | --- |
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**Use of improved Technology**

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## Questionnaire

ईनोभेटिभ भिजन प्रा.लि.

खाद्य तथा पोषण सुरक्षा सुधार आयोजना

**“Study on Effectiveness of Livestock Development Promotional Program and Home Nutrition Garden Programs in Project Implemented Areas “Sindhupalchok & Dolakha”**

**Household survey Questionnaire**

प्रष्टिकरण: नमस्ते मेरो नाम ………………… हो । हामी तपाईंको समुदायमा खाद्य तथा पोषण सुरक्षा सुधार आयोजनाको पशु विकास प्रवर्धन कार्यक्रम र पोषणका लागि घर बगैंचा कार्यक्रमको प्रभावकारिता सम्बन्धमा सर्वेक्षण गर्दैछौं । यो सर्वेक्षणले हामीलाई आयोजना संचालन भएदेखि हालसम्मको प्रगति बारे जान्न र तपाईंको क्षेत्रमा आयोजनाले गरेको योगदानको अवस्था जान्न र भविश्यमा के कसरि प्रभावकारी कार्यान्वयन गर्न सकिन्छ भन्ने सुझाव दिन मद्दत गर्नेछ । तपाईंको सहभागिता स्वैच्छिक छ । तपाईंका सबै सूचनाहरु गोप्य रहनेछन् । तपाईको केहि जिज्ञासा भए सोध्नसक्नु हुनेछ । सर्वेक्षण शुरु गर्ने अनुमति चाहान्छौ ।

**SURVEY OVERVIEW**

फम न :

गणकको नाम:

जिल्ला: सिन्धुपाल्चोक—1 दोलखा—2

गाउँपालिकाको नाम : कालिन्चोक—1 तामाकोशी—2 र्इन्द्रावती—3 लिसंखु पाखर—4

वार्ड :

गाउँको नाम :

सम्पर्क नम्बर :

**A घरधुरी विवरण**

**घरधुरीको नाम :** A1…………………………………………. उमेर:A2 ………..

लिङ्ग: A3 पुरुष=१ महिला =२ अन्य =३

जात:A4 दलित =१ जनजाति=२ ब्राहमण/क्षेत्री/ठकुरी=३ मुसलमान=४ अन्य =५

शैक्षिक अवस्था A5: शिक्षित=१ अशिक्षित =०

यदि शिक्षित भए कतिसम्म पढेको ?A6...

घरधुरीकोमा पशुपन्क्षि तथा करेशा बारी :A7 छ =१ छैन=0

सोधपुछ: A8 मूख्य घरधुरीसँग =१ नजिको परिवार सदस्य =२ नजिकैको परिवार सदस्यको समन्ध मूख्य घरधुरीसँग A9: पत्नी /पती=२ , छोरा=३ , छोरी=४, दाजुभाइ/दिदीबहिनी= ५, नाती =६, हजुरबुवा/हजुरआमा =७ , अन्य =८

**B सामाजिक तथा आर्थिक विवरण**

* B1 पछिल्लो १२ महिनामा घरको कुनै सदस्यले काम गरेर आर्थिक आम्दनी गरेको छ? छ =१ , छैन=२
* B2 घरको कुनै पनि सदस्यले आर्थिक आम्दनी नगरेको खण्डमा, कारणसहित;

१ . सेवानीवृत २ .विद्यार्थी ३. गृहिणी ४. काम पाउन नसेकेको ५.सुत्केरी

६. वृद् ७ . धेरै जवान ८. शारीरिक असक्षम ९. कोविड़-१९ को कारण कम गुमाएको

१० . अन्य

1. B3 घर मुली सद्स्यको मुख्य पेसा: …….

पेशा न: कृषि =१ , सरकारी जागिर =२ , शिक्ष्क =३ , डाक्टर=४ , शिल्पकार=५ , व्यापारी =६ , कामदार =७ , अन्य=८

* B4 घरपरिवार को औसत मासिक आय कति छ?

<५००० ५०००-२०००० २०००० -३५००० ३००००-५०००० >५००००

B5 आफूलाई कस्तो ठान्नुहुन्छ ? धेरै गरीब=१ , गरीब =२ , मध्यम आय स्तर=३ , धनी =४ , धेरै धनी=५

B6 घरपरिवारको मासिक खर्चको बारेमा सोध्नुहोस्?

|  |  |
| --- | --- |
| **विशेष** | **खर्च (एक महिनाको लागि NRs)** |
| उपभोग खर्च |  |
| शिक्षा |  |
| स्वास्थ्य |  |
| पानी र बिजुली |  |
| भाडा |  |
| अन्य उपयोगिताहरू (यदि कुनै हो भने) |  |
| अन्य |  |

B7 तपाईंको घरको स्वामित्वको स्थिति के छ? मालिक=१ , भाडामा लिने=२ , नियोक्ता द्वारा प्रदान =३ , प्रयोगकर्ता मात्र =४ , अन्य =५

B8 पानीको प्राथमिक स्रोत के हो? इनार खने=१ , बोरहोल=२ , पोखरी/नदी/खोला/स्प्रिङ/नहर =३ , सार्वजनिक स्ट्यान्डपाइप =४ , घर भित्र प्लम्बिंग = ५ , पानी ट्यांकर = ६, अन्य

B9 वर्षको कति महिनाको लागि पानीको स्रोत भरपर्दो हुन्छ ? .................. महिना

B10 घरपरिवारमा खाना पकाउनको लागि ऊर्जाको प्राथमिक र माध्यमिक स्रोतहरू के हुन् काठ =१ , कोइला/चारकोल=२ , ग्यास इन्धन=३ , बिजुली=४ , भुरा=५ , जनावरको गोबर=६ , अन्य

B11 के घरपरिवारले विगत ५ वर्षमा प्राकृतिक, आर्थिक वा सामाजिक (जहाँसम्म तपाईको घरपरिवार सदस्यहरूको जीविकोपार्जन र/वा घरपरिवार कृषि/पशुपालन/माछापालनमा नकारात्मक प्रभाव पारेको छ) कुनै समस्या/आघातको सामना गरेको छ? छ =१ , छैन=२

B12 यदि हो भने, कृपया तीनवटा समस्या निर्दिष्ट गर्नुहोस्:

1.

2.

3.

**ग. खेती स्तरमा घरबारी बगैंचाबाट उत्पादन स्थिति**

C1 मौसम बेमौसम गरेर १२ महिना कै उत्पादन हुने बालिको नाम र मात्रा दिनुहोस; (कृपया तपाईंले खेती गर्नुभएको शीर्ष 5 तरकारीहरूको नाम सहित प्रदान गर्नुहोस्)

|  |  |  |
| --- | --- | --- |
| बालि | रोपिएको/खेती क्षेत्र (रोपनी) | मात्रा (क्विन्टल) |
| टमाटर |  |  |
| आलु |  |  |
| गोभी/बन्दा |  |  |
| फर्सी |  |  |
| .. |  |  |
|  |  |  |
| .. |  |  |
| .. |  |  |

C2 के यो परिवारमा कृषि जमिन महिला को नाम मा दर्ता भएको छ? छ =१ , छैन=२

C3 यदी छ भने कति जमिन महिलाको नाममा रहेको छ , रोपनी ………

C3 आथिक हिसाबले मूख्य कृषि पेशा के मा आधारित रहेको छ?

मुख्यतया बाली उत्पादन = १ , मुख्यतया पशुपालन = २ , माछापालन = ३ , मौरी पालन = ४ , च्याउ = ५ , फ्लोरिकल्चर = 6, रेशमकीरा = 7, अन्य

C4 मुख्यतया बाली उत्पादन के मा आधारित छ?

अन्नबालीको उत्पादन = १ , दालको उत्पादन = २ , ट्युबरको उत्पादन = ३ , तिलहनको उत्पादन = ४ , नगद बालीको उत्पादन = ५ , मसलाको उत्पादन = ६ , उत्पादन तरकारी बाली = ७ , चारा घाँस उत्पादन = ८ , फलफूल उत्पादन = ९ , अन्य

C5 मुख्यतया पशुपालन के मा आधारित छ?

गाइपालन = १, भैसीपालन =२, बाख्रा पालन = ३, कुखुरा पालन = ४, सुगुर/बुन्गुर पालन =५, अन्य

C6: जग्गा बिवरण

|  |  |
| --- | --- |
| कुल जग्गा (रोपनीमा) |  |
| खेति योग्य जमिन (रोपनीमा) |  |
| सिंचाई पुगेको खेतीयोग्य जमिन (रोपनीमा): |  |
| खेति योग्य तर सिचाई सुबिधा नभएको जमिन: |  |

C7 तपाइँ तपाइँको सिँचाइ नगरिएको वा वर्षामा आधारित जमिनमा तपाइँ सामान्यतया कुन प्रकारको बाली वा वनस्पति खेती गर्नुहुन्छ?

C8 गृह पोषण बगैंचा अन्तर्गत के कस्ता तरकारी, फलफुल र पशुधन छन्? तिनीहरु ले ओगटेको क्षेत्रफल सहित उल्लेख गर्नुहोस (TOP 5)

|  |  |
| --- | --- |
| बगैचा अन्तर्गत फलफुल/तरकारी/पशुधन नाम | क्षेत्रफलको % (ओगटेको) |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

C9 अघिल्लो वर्षको सोही बालीको तुलनामा तरकारी बाली, पशुधनको उत्पादन कस्तो रह्यो ?

|  |  |
| --- | --- |
| फलफुल/तरकारी/पशुधन | समान = १, थोरै =२, धेरै = ३, लागू हुँदैन = ४ |
| फलफुल |  |
| तरकारी |  |
| मासु |  |
| दुधको मात्रा |  |
| दुधमा लाग्ने FAT % |  |
| अण्डा |  |
| घरको बगैचामा पोषक तत्वको विविधता |  |
| मृत्यु दर स्थिति   * दुग्ध जनावर * बाख्रा * कुखुरा |  |
| अन्य |  |

C10 तपाईको कृषि उत्पादनको मुख्य उद्देश्य गन्तव्य के हो ?

* कम वा कुनै उपभोग बिना मुख्यतया बिक्री उद्देश्यको लागि उत्पादन (९० % भन्दा बढी) = १
* केहि खपत संग बिक्री को लागी मुख्य रूप देखि उत्पादन (९० % सम्म ५० % भन्दा बढी बिक्री) = २
* मुख्यतया आफ्नै उपभोगको लागि उत्पादन गर्दै, केहि बिक्रीको साथ(१०% भन्दा बढी र ५०% सम्म बेच्ने)=३
* मुख्य रूपमा आफ्नै उपभोगको लागि उत्पादन गर्दै (10% वा कम बिक्री) = ४

C11 तरकारी बालीमा अघिल्लो वर्षको तुलनामा विपद्का कारण केही नोक्सान भयो?

छ = १ , छैन = २ यदि हो भने कति नोक्सान भयो ? veg1 (…….kg),

veg2 (……..kg), veg3 (………kg), veg4 (……..kg), veg5(………kg)

(कृपया तपाईंले खेती गर्नुभएको शीर्ष 5 तरकारीहरूको नाम प्रदान गर्नुहोस् veg1,….. veg5)

C12 विपद्का कारण पशुधन उत्पादनमा अघिल्लो वर्षको तुलनामा केही नोक्सान भएको छ ?

छ =१ , छैन=२ , C13 यदी हो भने कति मात्र नोक्सान भयो दुध (…..)ltr , मासु (……)kg , अण्डा (…….)numbers

C14 के घरपरिवारमा कृषि र पशुपालन क्षेत्रका कुनै पनि बिक्रीयोग्य उत्पादनहरू छन्? छ = १ , छैन = २

|  |  |  |
| --- | --- | --- |
| SN | क्षेत्र | विशिष्ट उत्पादनहरूको नाम (स्थानीय रूपमा / क्षेत्रीय रूपमा / टाढाको रूपमा बजार योग्य) |
| 1 | कृषि (अनाज/दाल/फलफूल/तरकारी/मसला) |  |
| 2 | पशुधन (भैंसी, गाई, बाख्रा, कुखुरा/ हाँस, सुँगुर, आदि) |  |
| 3 | वन आधारित (NTFP, औषधीय जडीबुटी/बिरुवा, आदि) |  |

C15 के घरपरिवारसँग प्रमुख तरकारी बाली र पशुजन्य उत्पादनहरूको बजारीकरण सम्झौता छ? छ = १ , छैन = २

C16 यदि छ भने तरकारी उत्पादनहरू र पशजन्य पदार्थ बिक्रि गर्ने सम्झौता भएको छ ?

C17 यदि छैन भने, घरपरिवारले तरकारी बालीको उत्पादन कसरी बेच्यो? - तरकारी बालीको मूल्य श्रृंखला

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SN | मार्केटिङ च्यानल | बजार अभिनेताहरूको नाम | तरकारी | | दुध | | मासु | | अन्डा | |
|  |  |  | Q | P | P | Q | P | Q | P/no | Q (no) |
| 1 | किसान-स्थानीय गाउँ उपभोक्ता |  |  |  |  |  |  |  |  |  |
| 2 | किसान - सङ्कलन केन्द्र |  |  |  |  |  |  |  |  |  |
| 3 | किसान ग्रामीण बजार |  |  |  |  |  |  |  |  |  |
| 4 | किसान-स्थानीय खुद्रा विक्रेता |  |  |  |  |  |  |  |  |  |
| 5 | नजिकैको बजारमा किसान-ठूलो कलेक्टर |  |  |  |  |  |  |  |  |  |
| 6 | किसान-थोक बिक्रेता सह प्रोसेसर/मिलर |  |  |  |  |  |  |  |  |  |
| 7 | किसान-बिचौलिया |  |  |  |  |  |  |  |  |  |
| 8 | किसान-कृषि सहकारी/फर्महरू |  |  |  |  |  |  |  |  |  |
| 9 | अन्य |  |  |  |  |  |  |  |  |  |

जहाँ, Q=बिक्रीको मात्रा (किलोग्राम) र P=मूल्य प्रति एकाइ (रु/किग्रा)

C18 बजारमा आफ्नो उत्पादन ढुवानी गर्न तपाईले मुख्यतया कुन यातायातको माध्यम प्रयोग गर्नुहुन्छ?

मान्छे..१; जिप....२; बस....३; ट्रयाक्टर...४; जनावरले (गधा)...5

अन्य (कृपया निर्दिष्ट गर्नुहोस्)……….

C19 तपाईंको खेतबाट बजारमा आफ्नो उत्पादन ढुवानी गर्न प्रति इकाई लगभग कति खर्च लाग्छ? (कृपया औसत मान प्रदान गर्नुहोस्)….

C20 तरकारी र पशुपन्छी उत्पादन बेच्ने बजार मूल्य बारे घरपरिवारलाई कसरी थाहा हुन्छ?

|  |  |  |
| --- | --- | --- |
| SN | जानकारीको स्रोत | पहुँचयोग्यता (धेरै पहुँचयोग्य = १ , मध्यम पहुँचयोग्य = २ , पहुँच गर्न गाह्रो = ३ |
| 1 | सरकारी विस्तार सेवाहरू |  |
| 2 | अन्य व्यक्तिगत किसान |  |
| 3 | NGO/परियोजना कर्मचारी |  |
| 4 | किसान समूह/सहकारी |  |
| 5 | व्यापारी / बजार अभिनेता |  |
| 6 | Agrovet/इनपुट आपूर्तिकर्ता |  |
| 7 | अरू….. |  |

C22 मार्केटिङ इन्फ्रास्ट्रक्चर (MI) (संकलन केन्द्र, हाटबजार, ग्रामीण बजार, आदि) सम्मको दुरी ?

|  |  |  |
| --- | --- | --- |
| SN | बजार पुर्बधार | घरधुरी देखि (in km) |
| 1 | कृषि बजार/हाट बजार |  |
| 2 | तरकारी संकलन केन्द्र |  |
| 3 | दूध संकलन केन्द्र |  |
| 4 | भण्डारण संरचना |  |
| 5 | अन्य… |  |

C23 घरधुरी पोषण स्थितिमा परियोजनाको प्रभाव (खाद्य खपत स्कोर, FCS) मा परिवर्तनद्वारा मापन गरिएको छ।

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| गाउँपालिका | आधारभूत अंक | नतिजा | वर्तमान स्कोर | नतिजा |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

C24 लक्षित जिल्लाहरूमा लाभार्थीहरूको लागि औसत घरेलु आहार विविधता (HDD) स्कोर

|  |  |  |
| --- | --- | --- |
| खाद्य प्रकार | दोलखा (%) | सिन्धुपाल्चोक (%) |
| अनाज  भिटामिन ए भरपूर तरकारी  सेतो कंद र जरा  गाढा हरियो तरकारी  अन्य तरकारी  भिटामिन ए भरपूर फलफूल  अन्य फलहरू |  |  |
| मासु  दूध  अण्डा  तेल र बोसो  माछा  दलहन  मसला र मसलाहरू  पेय पदार्थ |

C25 आयोजना **लागु भएपछी पोषण र खाने बानीमा केहि परिवर्तन आएको महशुस गर्नु भएको छ? छ भने कस्तो परिवर्तन आएको छ ? (**लागू हुने सबै छान्नुहोस्)

* **खानामा सन्तुलिन भोजनको प्रयोग बढेको**—1
* **ब्याक्तिगत आनी बानी र सफाईमा सुधार**—2
* **बालबालिकाहरुमा होंचो पुड्को, उमेर अनुसार कम तौल, ख्याउटे हुनेको संख्या घटेको**—3
* **महिलाहरुमा रक्त अल्पतोको समस्या कद भएको**—4

C26 **तपाइको परिवारको कोहि सदस्यहरुले पोषण र खाद्य स्वछता सम्बन्धी तालिम लिनेभएको छ? छ­-१; छैन-२**

C27 **तपाइको वडामा महिला स्वास्थ्य स्वयंसेविका हुनु हुन्छ? छ--१ ; छैन –२**

किसानहरूले आफ्नो पहिचान कसरी गर्ने?

1 **पशुपालन किसानहरू मात्र ... केवल पशुधन** विकास कार्यक्रम **सम्बन्धित प्रश्नावली सोध्नुहोस्**

2 **केवल घरबारी पोषण बगैचा किसानहरू ..... केवल गृह बगैचा प्रश्नावली सोध्नुहोस्**

3 **दुबै……….. दुबै प्रश्नावली सोध्नुहोस्**

**D पशुधन विकास कार्यक्रम**

D1 आफ्नो क्षेत्रमा लागु भएको पशुधन बिकास कार्यक्रम बारे जानकार हुनुहुन्छ ? क) हो ख) होइन

D2 के तपाईंले कार्यक्रम अन्तर्गत कुनै पशु विकास गतिविधि वा तालिममा भाग लिनुभएको छ?

क) हो ख) होइन

D3 यदि तपाइँ सहभागी हुनुभएको छ भने, कृपया तपाइँको पशुधन सम्बन्धी ज्ञान र सीपहरू सुधार गर्न पशुधन विकास कार्यक्रमको प्रभावकारिता मूल्याङ्कन गर्नुहोस्:

क) धेरै प्रभावकारी b) केहि प्रभावकारी c) तटस्थ घ) धेरै प्रभावकारी छैन e) बिल्कुल प्रभावकारी छैन

D4 कार्यक्रममा सहभागी भइसकेपछि आफ्नो पशुधन उत्पादन वा आम्दानीमा कुनै सकारात्मक परिवर्तन देख्नुभएको छ? क) हो ख) होइन ग) लागू हुँदैन (भाग लिएन)

D5 पशुपालनसँगको तपाईंको अनुभवमा, तपाईंले सामना गर्नुभएका प्रमुख उत्पादन समस्याहरू के हुन्? (कृपया शीर्ष तीन चयन गर्नुहोस्)

a) रोगको प्रकोप वा स्वास्थ्य समस्याहरू……..1

b) गुणस्तरीय दाना वा चारामा पहुँचको अभाव…………2

c) खराब प्रजनन प्रदर्शन………….3

d) उच्च मृत्यु दर………..4

e) अपर्याप्त आवास वा पूर्वाधार……..5

f) आनुवंशिक सीमितता वा कम गुणस्तरको प्रजनन स्टक……….6

g) बजार पहुँच र मूल्य उतार-चढ़ाव……….7

h) अन्य (कृपया निर्दिष्ट गर्नुहोस्)….

D6 यस्ता समस्यालाई सम्बोधन गर्न सरकार र INGOs बाट कस्तो प्रकारको हस्तक्षेप आवश्यक छ जस्तो लाग्छ?

a) आर्थिक सहायता वा अनुदान……….1

b) प्राविधिक तालिम वा क्षमता निर्माण कार्यक्रमहरू……….2

c) भेटेरिनरी सेवा वा स्वास्थ्य सेवा कार्यक्रमहरू………….3

d) गुणस्तरीय दाना वा चारा स्रोतहरूमा पहुँच………..4

e) सुधारिएको प्रजनन स्टक वा आनुवंशिक सामग्री…………..5

f) पूर्वाधार विकास (जस्तै, आवास, खानेपानी)………….6

g) बजार पहुँच वा मूल्य श्रृंखला विकास समर्थन………7

h) अन्य (कृपया निर्दिष्ट गर्नुहोस्)

D7 के तपाईंले पशु विकास कार्यक्रमबाट कुनै आर्थिक वा प्राविधिक सहयोग प्राप्त गर्नुभएको छ?

क) हो ख) होइन

D8 यदि हो भने, कृपया तपाईंको पशुधन-सम्बन्धित अभ्यासहरू सुधार गर्न प्रदान गरिएको समर्थनको प्रभावकारिता मूल्याङ्कन गर्नुहोस्:

क) धेरै प्रभावकारी b) केही हदसम्म प्रभावकारी c) तटस्थ घ) धेरै प्रभावकारी छैन e) बिल्कुल प्रभावकारी छैन f) समर्थन प्राप्त गरेन

D9 तपाईं आफ्नो क्षेत्रमा भेटेरिनरी सेवाहरूको उपलब्धता र पहुँचबाट कत्तिको सन्तुष्ट हुनुहुन्छ?

क) धेरै सन्तुष्ट ख) केही हदसम्म सन्तुष्ट ग) तटस्थ घ) केही हदसम्म असन्तुष्ट ई) धेरै असन्तुष्ट

D10 पशुधन व्यवस्थापनसँग सम्बन्धित निम्न क्षेत्रहरूमा आफ्नो ज्ञान र सीपहरूप्रति तपाईं कत्तिको विश्वस्त हुनुहुन्छ? कृपया 1 देखि 5 को स्केलमा मूल्याङ्कन गर्नुहोस्, 1 लाई "विश्वस्त छैन" र 5 "धेरै विश्वस्त।"

क) पशु स्वास्थ्य र रोग व्यवस्थापन (……..)

ख) खुवाउने र पोषण अभ्यासहरू (……..)

ग) प्रजनन र प्रजनन (……..)

घ) आवास र पूर्वाधार (……..)

D11 पोहोर र अहिले पशुधन के कति संख्यामा छन् भन्नुहोस

|  |  |  |
| --- | --- | --- |
| पशुधन | पोहोर | अहिले |
| बाख्रा |  |  |
| गाइ/भैसी |  |  |
| कुखुरा |  |  |

**E कुखुरा पालक कृषक**

Q E1 यो कार्यक्रममा सहभागी भएपछी, कुखुराको कति % ले मासु वृद्धि भयो?

E2 पोल्ट्री विकास प्रवर्द्धन कार्यक्रमले तपाइँको कुखुरा पालन अभ्यासलाई कसरी प्रभाव पारेको छ? कृपया 1 देखि 5 को स्केलमा निम्न पक्षहरूलाई मूल्याङ्कन गर्नुहोस्, 1 "कुनै प्रभाव छैन" र 5 "महत्वपूर्ण प्रभाव" भएको छ:

तपाईको कुखुरा पालन व्यवसायको समग्र उत्पादकता र नाफा (………….)

तपाईंको कुखुराको स्वास्थ्य र कल्याण फिड व्यवस्थापन र पोषण अभ्यासहरू (………….)

रोग रोकथाम र नियन्त्रण उपायहरू (………….)

आवास र पूर्वाधार सुधार (………….)

E3 परियोजनाको परिणाम स्वरूप तपाईंले आफ्नो कुखुरापालन अभ्यासहरूमा के विशेष परिवर्तन वा सुधारहरू देख्नुभएको छ?

**F बाख्रापालक कृषक**

F1 नया जातका बाख्राहरु कुनै केहि पाल्नु भएको छ? A. छ =1 B. छैन=2

F2 यदि छ भने, जातहरु भन्नुस:............

F3 खोरेत जस्ता रोगबिरुद्द खोप लगाउनु भएको छ? A. छ =1 B. छैन = 2

F4 बाख्रा मृत्युदर कम भएको छ? A. छ =1 B. छैन =2

F5 तपाइँ सामान्यतया तपाइँको बाख्रा कसरी बेच्नुहुन्छ?

स्थानीय बजार—1 , उपभोक्तालाई प्रत्यक्ष—2 , बिचौलिया मार्फत—3, अन्य—4

F6 पशुपालन विकास प्रवर्द्धन कार्यक्रमले तपाईंको बाख्रा पालन अभ्यासलाई कसरी प्रभाव पारेको छ? कृपया 1 देखि 5 को स्केलमा निम्न पक्षहरूलाई मूल्याङ्कन गर्नुहोस्, 1 "कुनै प्रभाव छैन" र 5 "महत्वपूर्ण प्रभाव" भएको छ:

तपाईको बाख्रा पालन व्यवसायको समग्र उत्पादकता र लाभप्रदता (……….)

तपाईंको बाख्राहरूको स्वास्थ्य र कल्याण (……….)

प्रजनन र प्रजनन सफलता (……….)

बाख्रा उत्पादनको गुणस्तर (मासु, दूध, आदि) (……….)

तपाईंको बाख्राको बथानको आनुवंशिक सुधार (……….)

**F7 घरपरिवार (प्रति बाख्रा) द्वारा उत्पादनको लागि बार्षिक बाख्रा पालन उत्पादन लागत कति छ?**

|  |  |  |  |
| --- | --- | --- | --- |
| खर्च | मात्रा | दर (NRs.) | जम्मा (NRs.) |
| दाना/चारा (kg) |  |  |  |
| घास |  |  |  |
| खोर निर्माण |  |  |  |
| औषधि उपचार / खोप खर्च |  |  |  |
| श्रम लागत- हेरचाह गर्न |  |  |  |
| अन्य खर्च |  |  |  |

F8 एक बर्ष पालेको बाख्रा सरदर कति मुल्यमा बिक्रि हुन्छ / कति मात्राको मासु उत्पादन गर्छ/ कति मूल्यका पाठा पाथी पाउछन? (किसानले बढी जे गर्छन त्यसैलाई आधार मान्ने)…

**G गाइभैसी पालक कृषक**

G1 AI (किर्तिम गर्वधारको प्रयोग कत्तिको गर्नुहुन्छ? गर्छु= १ गर्दिन=२  
G2 बिमा कार्यक्रममा सहभागी हुनुभएको छ? छु = १ छैन = २

G3 गोठ सुधार गर्नुभएको छ? छु = १ छैन = २

G4 पशुचौपायलाई चाहिने घास खेति गर्नु भएको छ? A. छ =1 B. छैन =2

G5 गाइ भैसी बिरामी पर्दा टेक्निसियनको सल्लाह सुझाब कत्तिको ग्रहण गर्नुहुन्छ? गर्छु -१ गर्दिन - २  
G6 यदि तपाईंले परियोजनामा ​​भाग लिनुभएको छ भने, कृपया निम्न पक्षहरूलाई 1 देखि 5 को स्केलमा मूल्याङ्कन गर्नुहोस्, 1 धेरै असन्तुष्ट र 5 धेरै सन्तुष्ट भएकोमा:

क) तालिम र प्राविधिक सहयोगको उपलब्धता (…………)

ख) पशुधन स्रोतहरूमा पहुँच (जस्तै, जनावर, दाना, पशु चिकित्सा हेरचाह): (…………)

ग) आय आर्जनका अवसरहरू: (…………)

घ) घरायसी पोषणमा सुधार: (…………)

**G7 घरपरिवार (प्रति गाइ /भैसी) द्वारा उत्पादनको लागि दुध, दहि, घिउ उत्पादन लागत कति छ? (प्रति महिना)**

|  |  |  |  |
| --- | --- | --- | --- |
| खर्च | मात्रा | दर (NRs.) | जम्मा (NRs.) |
| दाना/चोक्कर (kg) |  |  |  |
| घास/पराल |  |  |  |
| गोठ निर्माण |  |  |  |
| औषधि उपचार, AI खर्च |  |  |  |
| श्रम लागत- हेरचाह गर्न |  |  |  |
| अन्य खर्च |  |  |  |

G8 मासिक रुपमा कति मुल्य बराबरको दुध, घिउ, दहि उत्पादन हुन्छ?

G9 पाडा, पाडीको मूल्य कति छ?

**H मासु, अण्डा, कुखुरा पाडा पाडी ब्यालेन्स शीट (बार्षिक):**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SN | अन्तिम गन्तव्य | परिमाण Kg | परिमाण ltr | संख्या | संख्या | संख्या |
|  | | मासु | दुध | कुखुरा | अण्डा | पाडा पाडी |
| 1 | आफ्नै प्रयोग |  |  |  |  |  |
| 2 | बेचियो |  |  |  |  |  |
| 3 | नोक्सान |  |  |  |  |  |
| 4 | अन्य |  |  |  |  |  |

H1 पशुधन परियोजनाले तपाईंको घरपरिवारको आम्दानीमा कस्तो प्रभाव पारेको छ?

उल्लेख्य रुपमा बढेको छ-------१ मध्यम वृद्धि भएको छ-----२ , उस्तै रह्यो------३

सामान्य घटेको छ--------४ उल्लेख्य रुपमा घटेको छ-------५

**I घरबारी पोषण बगैचा कार्यक्रम**

I1 के तपाइँ तपाइँको क्षेत्रमा लागू गरिएको घरबारी पोषण बगैचा कार्यक्रम बारे सचेत हुनुहुन्छ?

छु =१ छैन = २

I2 के तपाईंले कार्यक्रम अन्तर्गत गृह पोषण बागवानी सम्बन्धी कुनै गतिविधि वा तालिममा भाग लिनुभएको छ? छु =१ छैन = २

I3 यदि तपाईंले भाग लिनुभएको छ भने, कृपया गृह बगैंचासँग सम्बन्धित तपाईंको ज्ञान र सीपहरू सुधार गर्न गृह पोषण बगैंचा कार्यक्रमको प्रभावकारिता मूल्याङ्कन गर्नुहोस्:

क) धेरै प्रभावकारी =1 b) केही प्रभावकारी =2 c) तटस्थ= 3 घ) धेरै प्रभावकारी छैन =4

e) बिल्कुल प्रभावकारी छैन =5

I4 के तपाईंले गृह पोषण बगैंचा कार्यक्रमको कारण आफ्नो घरको खाद्य सुरक्षा र पोषणमा कुनै सकारात्मक परिवर्तनहरू देख्नुभएको छ? क) हो =1 ख) होइन =2 ग) लागू हुँदैन (भाग लिएन)= 3

I5 तपाइँ हाल तपाइँको घरको पोषण बगैंचामा कुन प्रकारका बाली वा तरकारीहरू उब्जाउनुहुन्छ? (लागू हुने सबै छान्नुहोस्)

1) पातदार सागहरू (जस्तै, पालक, काली) ……1

2) जरा तरकारीहरू (जस्तै, गाजर, मूली) ………2

3) टमाटर ……….3

4) काक्रो, घिरौला जस्ता झालमा फल्ने तरकारी ………….4

5) सिमी …………5 6) फलफूल……….6

7) जडिबुटी (जस्तै, तुलसी, पुदिना)……….7 8) अन्य (कृपया निर्दिष्ट गर्नुहोस्:)……..8

Q I7 तपाईले आफ्नो घरबारी पोषण बगैचाबाट कति पटक उपभोग गर्नुहुन्छ?

1) दैनिक=1 2) हप्तामा धेरै पटक=2 3) हप्तामा एक पटक =3 4) विरलै= 4

I8 औसतमा, तपाईको कुल खेती गरिएको क्षेत्रफलको कति प्रतिशतमा हाइब्रिड बीउहरू रोपिएको छ? ....... .%

I9 गृह बागवानीसँग सम्बन्धित निम्न क्षेत्रहरूमा तपाइँको ज्ञान र सीपहरू बारे तपाइँ कत्तिको विश्वस्त हुनुहुन्छ? कृपया 1 देखि 5 को स्केलमा मूल्याङ्कन गर्नुहोस्, 1 लाई "विश्वस्त छैन" र 5 "धेरै विश्वस्त।"

क) बीउ छनोट र रोपण प्रविधि (………) ख) माटोको तयारी र उर्वरीकरण(………)

ग) कीट र रोग व्यवस्थापन (………) घ) फसल काट्ने र फसल पछिको अभ्यासहरू (………)

I20 तपाइले उन्नत/हाइब्रिड बिउको प्रयोग गर्नुहुन्छ? गर्छु—1 गर्दिन—2

I21 यदि गर्ने भए कुन कुन तरकारी/बालीमा उन्नत बिउ प्रयोग गर्नुहुन्छ?.....

I22 बेमौसममा उत्पादन गर्नलाई टनेल प्रयोग गर्नुहुन्छ? गर्छु—1 गर्दिन—2

I23 किरा नियन्त्रण गर्नको लागि IPM को प्रयोग गर्नुहुन्छ? गर्छु—1 गर्दिन—2

**J अभ्यासमा प्रभाव:**

J1 लक्षित प्रविधिको अवलम्बनले तपाईंको खेती अभ्यासलाई कसरी असर गरेको छ? कृपया 1 देखि 5 को स्केलमा निम्न पक्षहरूलाई मूल्याङ्कन गर्नुहोस्, 1 "कुनै प्रभाव छैन" र 5 "महत्वपूर्ण प्रभाव" भएको छ:

उत्पादकता (…………..) दक्षता (…………..)

लागत प्रभावकारिता (…………..) उत्पादनको गुणस्तर (…………..)

समय बचत (…………..)

J2 प्रविधि अपनाएपछि आफ्नो कृषि गतिविधिको समग्र नाफामा कुनै परिवर्तन देख्नुभएको छ ? छ = 1; छैन =2

J3 १ देखि ५ को स्केलमा प्रविधिको प्रयोग र प्रयोगलाई सहज बनाउन तालिम र सहयोगको प्रभावकारितालाई तपाइँ कसरी मूल्याङ्कन गर्नुहुन्छ, जसमा १ "अति प्रभावकारी छैन" र ५ "अत्यधिक प्रभावकारी" भएको छ?