NPSN: 166/081/82
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Baseline Agrobio Survey Report:

Kohalpur- 2, Banke

कृषि जैविक विविधता आधार- रेखा सर्वेक्षण प्रतिवेदन: कोहलपुर-2, बाँके

Enhancing conservation and utilization of plant genetic resources in Nepal for food and nutrition security under unpredictable climate (on-farm project)

The project of BSF-5 of the International Treaty (FAO) for the conservation and sustainable use of plant genetic diversity in order to improve the livelihoods for small-scale farmers in developing countries and promote food security and sustainable agriculture

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NAGRC, NARC, (Khumaltar, Lalitpur; https://genebank.narc.gov.np/)
National Agriculture Genetics Resources Center (NAGRC), commonly called Genebank was established in 2010 under the Nepal Agricultural Research Council (NARC) for the conservation and utilization of all agricultural genetic resources (AGRs), including the six components of agrobiodiversity (crop, forage, livestock, aquatic, insect and microorganism) and four subcomponents (domesticated, semi domesticated, wild related species and wild edible species). AGRs are managed through four strategies (ex-situ, on-farm, in-situ and breeding) and by deploying the 101 Good Practices across the country. AGR repositories Include seed banks, tissue banks, DNA banks, field genebanks, community genebanks, livestock farm genebanks, aqua pond genebanks, agro gene sanctuaries, and so on. All AGRs are managed scientifically and made available for research, study and production. Conservation through utilization following agroecology is also one of the strategy of this Center.

FAO (Rome, Italy; https://www.fao.org)
The Food and Agriculture Organization (FAO) is a specialized agency of the United Nations that leads international efforts to defeat hunger. FAO's goal is to achieve food security for all and make sure that people have regular access to enough high-quality food to lead active, healthy lives. With 195 members - 194 countries and the European Union, FAO works in over 130 countries worldwide.

BSF (https://www.fao.org/plant-treaty/areas-of-work/benefit-sharing-fund/projects-funded/en/)
The Benefit-sharing Fund (BSF) of the International Treaty is an essential element of the Funding Strategy and of the Multilateral System of Access and Benefit-sharing. The BSF is the operational mechanism for receiving, utilizing and sharing the monetary benefits arising from the Multilateral System and plays a catalytic role in international cooperation on plant genetic resources for food and agriculture (PGRFA).

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Cover photo: Project site, Kohalpur – 2, Banke

Contents

Acronyms

AGR	Agriculture Genetic Resources
AKC	Agriculture Knowledge Center
APGR	Agriculture Plant Genetic Resources
BSF	Benefit Sharing Fund
CBS	Central Bureau of Statistics
CSB	Community Seed bank
CWR	Crop Wild Relatives
EPB	Evolutionary Plant Breeding
FAO	Food and Agriculture Organization
FGD	Focused Group Discussion
HH	House Hold
ICARDA	International Center for Agricultural Research in the Dry Areas
KII	Key Informant Interview
LEC	Landrace Enhancement and Conservation
MoALD	Ministry of Agriculture and Livestock Development
NAFHA- Project	Nuts and Fruits Hilly Area Project
NAGRC	National Agriculture Genetic Resource Center
NGO	Non-Governmental Organization
NRs	Nepalese Rupees
PGR	Plant Genetic Resources
PGRFA	Plant Genetic Resources for Food and Agriculture
PRA	Participatory Rural Appraisal
PVS	Participatory Variety Selection
SQCC	Seed Quality Control Center
USD	United States Dollar
VDC	Village Development Committee

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The local communities micro-level baseline

The local community micro-level baseline will indicate the level of crop and varietal diversity within the agroecosystems and type of production system that are cultivated by the type of farmers, the availability of crop/varietal traits and the traits that are needed. The baseline will also indicate the institutional support and the capacity building needs of the farmers.

With core functionality in mind, and keeping the approach effective yet as simple as possible, the FGD serves as the practical approach for implementation. The FGDs, and the corresponding set of questions, aim to support farmers to assess and identify their own breeding objectives, such as traits preferences and issues of access to both cultivars and seeds. The FGD should be facilitated and documented in such a way that enable genuine farmers' data, their own analyses and setting their own objectives. The participation of men and women farmers, and ownership are of utmost importance. The FGDs should help sustain commitments from communities and stakeholders. In this regard, it is important to avoid extractive data collection and analysis where farmers are only a source of data collection and validation.

About 8 to 15 participants are needed per FGD. In cases where the agro-eco-system and production types are similar, 4 to 5 FGDs are enough. In cases where the projects will cover more than one type of agro-eco-system and production types, 3 FGDs per type should be useful. To capture differentiated priorities by gender, economic status, youth, ethnicity, segregated FGDs should be conducted per agro-eco-system and production types. Identifying and segregating farmers by economic status is important and needs to be handled sensitively. Segregation based on similar grouping is more important than representation. Representation by unequal power and wealth positions can influence FGD results. Contradicting opinions provide depth of perspectives and understanding. Towards the end, a consensus should be achieved at the level of FGDs, so that each FGDs set their own on priorities. After all the FGDs are conducted, a community presentation of the various results and priorities of each FGDs would be ideal for the further buy-in of local leaders. However, given existing social differentiation within communities, there is no need to get a consensus at community level. Instead, the project should respond to the diverse needs and priorities identified by each FGDs.

When conducting a comprehensive baseline, and specifically after the project inception period, the use of the crop diversity wheel[1] is highly recommended during the project implementation. The crop diversity wheel is particularly useful when targeting the specific communities and segregated for gender and social inclusion. At such a stage the crop diversity wheel can inform the crop values and breeding objective of specific farmers.

[1] See for example https://sdhsprogram.org/assets/2021/08/Illustrated-Field-Guide-Module-2-on-Diagnostic-Stage_revised.pdf#page=15 or https://himalayancrops.org/concepts-tools/four-cell-analysis/

Executive summary

The Terai region of Nepal, renowned for its fertile plains and agricultural productivity, plays a pivotal role in the nation's food security and economy. Kohalpur Sub-Metropolitan City, situated in the Banke District of Lumbini Province, exemplifies the region's agricultural significance while facing challenges such as the loss of native landraces and overreliance on foreign germplasm. This report presents findings from a baseline survey conducted in Ward No. 2 of Kohalpur Municipality, focusing on the conservation and utilization of agricultural plant genetic resources (APGRs) to enhance food security, climate resilience, and agrobiodiversity.

The survey employed a mixed-methods approach, combining household surveys, focus group discussions, and key informant interviews to gather qualitative and quantitative data. A total of 76 households were randomly sampled to assess demographic trends, socio-economic factors, agricultural practices, and food security dynamics. The results reveal a community predominantly engaged in agriculture, with cereals like rice, wheat, and maize forming the staple diet. However, legume production remains critically low, highlighting a nutritional gap. Indigenous crops such as amaranth and buckwheat are widely consumed but face declining cultivation due to market pressures and labor-intensive processing.

Key findings indicate a strong reliance on informal seed networks, with farmers sourcing seeds from neighbors, local markets, and agrovets, while institutional support remains absent. Traditional seed storage practices, such as botanical additives and mud granaries, are prevalent, yet challenges like pest infestation and moisture control persist. The survey also documents the alarming erosion of traditional crop varieties, with 69 rice landraces already lost. Despite these challenges, farmers express willingness to cultivate indigenous crops, provided market linkages and climate-resilient varieties are made accessible.

The report outlines strategic recommendations to address these gaps, emphasizing the need for community-based conservation initiatives, participatory breeding programs, and policy interventions to integrate native genetic resources into formal agricultural systems. By strengthening local seed systems, promoting agroecological practices, and enhancing farmer capacity, the project aims to restore agrobiodiversity, improve livelihoods, and build resilience against climate change. The findings underscore the urgency of preserving traditional knowledge and genetic diversity to ensure sustainable agricultural development in Nepal's Terai region.

1. Background

1.1 Background information

The Terai region of Nepal, a fertile lowland belt, is one of the most agriculturally productive and economically significant areas of the country. Covering approximately 17% of Nepal's total land area, the Terai is characterized by its flat topography, subtropical climate, and rich alluvial soils, making it ideal for intensive agriculture (CBS, 2021). The region is often referred to as the "granary of Nepal" due to its substantial contribution to the national food supply, producing over 60% of the country's cereal crops, including rice, wheat, and maize, as well as cash crops like sugarcane, jute, and oilseeds (MoALD, 2020).

Kohalpur Sub-Metropolitan City, located in the Banke District of Lumbini Province in western Nepal, is a rich agricultural heritage. Situated in the fertile Terai region, Kohalpur serves as a vital hub for trade, commerce, and agriculture, connecting the plains of Nepal with the hilly regions. The city is strategically positioned near the East-West Highway, making it a key transit point and an economic gateway to the mid-western and far-western regions of the country (CBS, 2021).

Agriculture is the backbone of Kohalpur's economy, with a significant portion of the population engaged in farming. The region is known for its diverse agroecological conditions, which support the cultivation of a wide range of crops, including cereals, pulses, oilseeds, and vegetables (MoALD, 2020). However, like many parts of Nepal, Kohalpur has faced challenges related to the loss of native landraces and over reliance on foreign germplasm. The introduction of high-yielding exotic varieties has led to a decline in local genetic diversity, reducing resilience to climate change, pests, and diseases (Gauchan et al., 2018). Small-scale farmers in Kohalpur often struggle with maintaining traditional seed systems, accessing climate-resilient varieties, and coping with the high costs of agricultural inputs (Shrestha et al., 2019).

Kohalpur is a home to several indigenous and underutilized crop species, such as millets, lentils, and naked barley, which have historically played a crucial role in local food security and nutrition in Nepal. These crops are well-adapted to the region's agro-climatic conditions and hold significant cultural and nutritional value (Joshi et al., 2017). However, their cultivation has declined over the years due to the commercial farming promoting monoculture and exotic and the lack of market linkages (Bhandari et al., 2020).

In recent years, there has been a growing recognition of the need to conserve and promote these traditional crops to enhance food security, nutrition, and climate resilience. Initiatives like the "Enhancing Conservation and Utilization of Agricultural Plant Genetic Resources in Nepal" project have identified Kohalpur as one of a key site for implementing conservation and capacity-building activities (FAO, 2023). The project aims to strengthen community-based seed systems, promote participatory breeding approaches, and enhance the utilization of neglected and underutilized species. By doing so, it seeks to empower local farmers, preserve agro-biodiversity, and create sustainable agricultural practices tailored to the region's unique challenges (NARC, 2023).

Kohalpur's strategic location, agricultural potential, and cultural significance make it an ideal setting for initiatives that aim to bridge traditional knowledge with modern agricultural practices. Through collaborative efforts involving local farmers, community seed banks, research institutions, and government agencies, Kohalpur has the potential to become a model for sustainable agriculture and climate resilience in Nepal's Terai region (MoALD, 2021).

1.2 Project context

Agricultural plant genetic resources (APGRs) are vital for Nepalese livelihoods but have been severely compromised due to the loss of native landraces and overdependence on foreign germplasm. Since the introduction of exotic high-yielding varieties, approximately 50-100% of local genetic diversity has been lost. This, coupled with a narrow genetic base in the field and the loss of associated biodiversity, has reduced resilience to climate change and pests. Small-scale farmers face difficulties maintaining seed systems, relying on costly inputs, and lacking access to climate-resilient varieties. While the National Genebank has made strides in conservation, many genetic resources remained unexplored, uncharacterized, and underutilized.

This project aims to address these gaps by enhancing the conservation, characterization, and utilization of APGRs. By building capacity among farmers, researchers, extension officials and local communities, improving seed systems, and fostering collaboration, the project will ensure food, nutrition, health, business and environment security, strengthen agrobiodiversity, and create sustainable agricultural practices, addressing challenges posed by climate change and other stresses.

The main objective of this project is to address the lack of **comprehensive conservation of agricultural plant genetic resources (APGRs)** in Nepal, which has led to the loss of native genetic diversity and heavy reliance on foreign germplasm. By operating the National Genebank and implementing such as **ex-situ, on-farm, in-situ, and conservation breeding**, efforts are made to conserve and utilize these resources effectively. **Specific objectives are:**

- To enhance conservation and utilization of plant genetic resources in Nepal for food and nutrition security under unpredictable climate
- To contribute in enhancing conservation through utilization of agriculture genetic resources for climate change preparation
- To build a robust germplasm access and exchange mechanism for the country
- To build the capacity

1.3 Crops and Sites

Base on the backdrop, this project is mainly implemented in Kohalpur, Lumbini, and Madhynepal, Lamjung and focusing on neglected and underutilized species ie amaranths, buckwheat, millets, lentil, naked barley, faba bean and other crops based on gap analysis and farming communities' needs. There are many other secondary sites and crops along with other components of agrobiodiversity eg aquatic AGRs, agro-insects, agro-microbes, livestock and forages.

Stakeholders

The project brings together a diverse range of stakeholders, including community seed banks (CSBs) Community Genebank Network. Key partners also include local government bodies from various rural municipalities across different provinces. Several organizations and enterprises contribute to value chain development and market linkages, while academic and research institutions, along with multiple research stations under the Nepal Agricultural Research Council (NARC), support research, conservation, and capacity-building efforts. Government agencies such as the Ministry of Agriculture and Livestock Development (MoALD), the Seed Quality Control Center (SQCC), and other specialized research centers and NGOs play a vital role in policy formulation and implementation. Collectively, these stakeholders aim to enhance the conservation, utilization, and commercialization of PGRFA across Nepal.

Funding agency and Period

The International Treaty's new Funding Strategy features the Benefit-sharing Fund (BSF, managed by FAO) as a key component, operating through global calls for proposals and a competitive selection process and partial in-kinds support from NARC. Project period is of 4 years (20 April 2024 to 20 April 2028).

2. Objective of Baseline survey

- To enhance conservation and utilization of plant genetic resources in Nepal for food and nutrition security under unpredictable climate
- To contribute in enhancing conservation through utilization of agriculture genetic resources for climate change preparation
- To build a robust germplasm access and exchange mechanism for the country

3. Outputs

The main outputs expected during the implementation period are the following:
Output 1: Adapted PGRFA managed or improved with farmers' participation.

Output 2: Enhanced local value chains improve the production and consumption of adapted PGRFA.

Output 3: Mechanisms strengthened to enhance the sharing of PGRFA materials, data and knowledge.

4. Methodology

The community micro-level baseline survey was carried out in Kohalpur Municipality, specifically targeting Ward No. 2 in Banke District. This survey adopted a multi-tiered approach to gather both qualitative and quantitative data relevant to the project's objectives. The baseline was structured at two levels: a national macro-level and a community micro-level component. The macro-level baseline was aimed at informing the strategic orientation of the project and establishing partnerships with key stakeholders. To achieve this, tools such as interactions and key informant interviews (KIIs) were employed with policy makers, agricultural extension officers, and relevant institutional actors. These engagements were designed to capture critical insights into existing policies and institutional frameworks that affect agrobiodiversity in Nepal.

In parallel, a comprehensive literature review was conducted to enrich the macro-level data. This included policy documents and research studies from national government sources, the Food and Agriculture Organization (FAO), and national research institutions. The findings from this review supported the documentation of the project's potential contribution to national agrobiodiversity policies, regulations, and long-term sustainability objectives. This component of the study was instrumental in guiding the planning of project activities and in aligning implementation strategies with existing regulatory frameworks. Moreover, the macro-level analysis provided a broader picture of the status of agrobiodiversity and the role of traditional knowledge and indigenous practices in conservation.

At the micro-level, a variety of Participatory Rural Appraisal (PRA) tools and techniques were used to collect data directly from the community. These tools included social and resource mapping, seasonal calendars, matrix scoring, key informant discussions, and group interactions. The micro-level baseline aimed to compile detailed, community-specific information about the conservation and utilization status of indigenous crops and farming practices rooted in traditional knowledge systems. This community-based approach ensured that the data reflected local realities and would inform practical, ground-level interventions under the project.

4.1 Household Survey

4.1.1 Sampling

To efficiently collect primary data, random sampling was adopted. This method is recognized for being cost-effective while providing statistically significant results (Casley & Kumar, 1988). The survey focused on households that were actively engaged in traditional agricultural practices and cultivating indigenous crops. As per the 2021 Population Census, Kohalpur Municipality had approximately 17,500 households with a total population of around 65,000. Specifically, Ward No. 2 consisted of approximately 1,350 households. From this population, a total of 76 households were randomly selected for data collection. The selected households represented a diverse cross-section of the community, particularly those known to be practicing traditional and indigenous farming methods.

These 76 households were selected to provide insights into the conservation status of agrobiodiversity, the skills and knowledge retained within the community, and the unique agricultural practices employed. Households were chosen through a stratified random sampling technique to ensure representation across different socioeconomic groups and ethnicities within the ward. This helped ensure that the data collected was comprehensive and reflected the heterogeneity of the local population.

4.1.2 Questionnaire Preparation and Pre-testing

A semi-structured questionnaire was developed to collect detailed information at the household level. The questionnaire focused on capturing data related to agrobiodiversity conservation, the use and status of traditional skills, cultivation practices, indigenous crops, and custodian farmers. Prior to conducting the full survey, the questionnaire was pre-tested in a nearby community with similar socio-economic and agricultural

conditions. The pre-testing phase was critical to refining the wording, structure, and sequencing of questions to ensure clarity and cultural relevance.

Following revisions based on the pre-testing feedback, the baseline household survey was conducted during the months of February and March. Enumerators were trained to conduct the interviews ethically and systematically, ensuring consistency in data collection across the study area. The survey process also aimed to build rapport with the community members, which helped improve the quality and accuracy of responses.

4.1.3 Data Entry and Analysis

Once data collection was completed, the information from the household surveys was systematically coded and entered into Microsoft Excel. Each variable was cleaned and standardized to prepare the dataset for analysis. The process of cleaning involved checking for inconsistencies, missing values, and converting data into standard units to allow for comparability across sites. In instances where data was incomplete or unclear, follow-up phone calls were made to the respective households to verify or complete the information.

The finalized dataset was then analyzed by the project team, incorporating shared insights from different team members to strengthen the interpretation of findings. The results derived from this analysis are detailed in the subsequent sections of the report and are intended to guide the implementation of project activities focused on conserving agrobiodiversity and promoting traditional agricultural knowledge in Kohalpur.

4.2 Focus Group Discussion:

collaboration with an expert team. A total of four FGDs were conducted in Muktinagar, Bikashnagar, Krishnanagar, and Anandanagar. Muktinagar is located at latitude 28.215874° N, longitude 81.686473° E, at an altitude of 184 meters above sea level (masl); Shantinagar at latitude 28.124864° N, longitude 81.676453° E, with an altitude of 182 meters; Krishnanagar at latitude 28.509712° N, longitude 81.794027° E, with an altitude of 179 meters; and Bikashnagar at latitude 28.211783° N, longitude 81.71305219° E, with an altitude of 184 meters. The discussions were held on February 22, 24, 25, and 26, 2025, engaging local farmers in identifying key agricultural challenges and exploring potential solutions for sustainable farming practices. In total, 48 participants took part in the FGDs.

5. Site characteristics

5.1 District Overview

Banke District, located in Lumbini Province of western Nepal, is recognized for its ecological diversity, cultural richness, and strategic geographic location. Encompassing an area of approximately 2,337 km^2, Banke lies within the fertile plains of the Terai region and includes transitional zones of the Chure and Bhabar ranges. The district spans latitude 28.0500° N and longitude 81.6167° E, with elevation ranging from about 127 meters in the lowlands to 1,248 meters in the northern hilly fringes. It is bordered by Bardiya District to the west, Dang to the east, Salyan and Surkhet districts to the north, and shares a southern international boundary with India's Uttar Pradesh. Banke serves as a vital trade and transit hub, particularly through its district headquarters,

Nepalgunj, which connects Nepal with India and serves as a gateway to the mid-western hills and the Karnali region.

Banke is home to a culturally and linguistically diverse population. As per the 2021 census, the district has a population of around 603,194, comprising various ethnic groups such as Tharu, Yadav, Muslim, Magar, Chhetri, Brahmin, and Dalit communities. Linguistic diversity is also notable, with Nepali, Awadhi, Tharu, Urdu, and Hindi commonly spoken. The Tharu community maintains a strong cultural presence in the district, preserving unique traditions, dress, and festivals such as Maghi. Similarly, the Awadhi-speaking population has deep-rooted cultural ties with the neighboring Indian states, enriching the region's identity.

Agriculture is the backbone of Banke's economy. The fertile plains of the district support the cultivation of staple crops like rice, wheat, maize, and lentils, along with cash crops such as sugarcane, banana, and turmeric. Livestock farming including cattle, buffalo, goats, and poultry—is also a significant part of the rural economy. Irrigation infrastructure, largely supported by the Rapti and Babai rivers, facilitates year-round farming in many parts of the district. In addition to agriculture, a growing number of households depend on remittances from family members working abroad, especially in the Gulf countries and Malaysia. Small-scale businesses, cross-border trade, and employment in Nepalgunj's urban centers also contribute to household incomes.

Banke is rich in natural resources and biodiversity, primarily due to the presence of Banke National Park, which was established in 2010. The park covers an area of 550 km^2, with an additional 343 km^2 buffer zone. It forms part of the Terai Arc Landscape, providing critical habitat for wildlife such as Bengal tigers, elephants, leopards, and the endangered four-horned antelope. The park plays an important role in biodiversity conservation, eco-tourism, and environmental education. Religious and cultural landmarks also add to the district's significance, particularly the Bageshwori Temple in Nepalgunj, which attracts thousands of pilgrims annually and is one of the holiest shrines in western Nepal.

Administratively, Banke District is divided into 8 local governments, including 1 sub-metropolitan city (Nepalgunj), 1 municipality (Kohalpur), and 6 rural municipalities (Baijanath, Raptisonari, Khajura, Janaki, Duduwa, and Narainapur). These local bodies play a crucial role in governance, infrastructure development,

and delivery of basic services such as health, education, and agriculture extension. Nepalgunj, as a sub-metropolitan city, serves as the district's commercial and administrative nucleus, with growing facilities in transport, health, and education.

Despite its economic and ecological potential, Banke faces several development challenges. These include urban–rural disparities, insufficient infrastructure in remote areas, environmental degradation, and frequent flooding during the monsoon season. The district is also grappling with youth out-migration, which, while contributing remittances, has led to labor shortages in agriculture. Nevertheless, Banke's strategic location, fertile land, cultural diversity, and natural heritage position it as a vital economic and ecological zone in western Nepal. With targeted investments in climate resilience, infrastructure, and inclusive development, the district holds significant promise for sustainable growth and regional integration.

5.2 Site Overview

Ward No. 2 is one of 15 wards within Kohalpur Municipality, located in Banke District of Lumbini Province, Nepal. The municipality was officially formed in 2016/2018 by merging the former Village Development Committees (VDCs) of Kohalpur, Rajhena, and Shamsherganj. Ward No. 2 was created from the former Rajhena VDC ward no. 4 and covers approximately 16.38 km^2. According to the ward office, the population of Ward No. 2 stands at 11,746 persons as per municipal records. The ward's location places it within the fertile Terai plains, with a subtropical climate that typically experiences high summer temperatures up to 46 °C and winter lows around 4 °C. The area's landscape is flat to gently undulating, making it suitable for agriculture and settlement. Ward No. 2 sits along Ratna Highway and extends from the Rattan Highway boundary towards adjacent wards.

5.2.1 Population & Demographics

The total population of Ward No. 2 is 11,746, managed by Ward Office No. 2 based in the former Rajhena VDC area. At the municipal level, Kohalpur Municipality had 101,667 residents in 2021, residing in approximately 24,183 households. Across the municipality, demographic structure shows 48,968 males and 52,699 females, indicating a higher female-to-male ratio. Linguistic and ethnic diversity is a hallmark of the municipality. About 69.24% of residents speak Nepali, while 24.51% speak Tharu, and 4.7% speak Awadhi. Ethnic composition includes 43.6% hill Brahmin/Chhetri/Thakuri, 26.9% Madhesi and Tharu communities, 11% hill Dalits, 9.8% hill indigenous groups, and 2.7% Muslims. Though Ward No. 2–specific figures aren't published separately, this composition likely mirrors similar diversity, enriched by migration from neighboring hills and mid-hill districts.

5.2.2 Society & Culture

Ward No. 2 is ethnically and culturally mixed, with local representation across Tharu, hill caste groups (Chhetri, Brahmin), Dalits, Muslims, Madhesi communities, and others. This mixture supports a rich cultural tapestry, celebrated in local festivals (e.g., Tharu Maghi) and shared traditions. The influx of hill settlers post-1990s

insurgency has further diversified the neighborhoods known as Driver Tol, Lahure Tol, and others, bringing unique cultural practices and languages.

5.2.3 Economy & Land Use

Agriculture remains the primary economic activity in Ward No. 2 and across Kohalpur Municipality. The area's fertile soils and extensive irrigation support cultivation of rice, wheat, maize, lentils, vegetables, and cash crops like sugarcane, banana, and turmeric. At the municipal level, about 52.9% of residents are engaged in agriculture and livestock farming. Other occupations include day labor (21.9%), business (11.27%), government and NGO employment (13.86%), and minimal engagement in small industries (0.09%).

Given its strategic location on the Ratna–Mahendra highway junction, Ward No. 2 benefits from road access that supports small local businesses, trade, and commuting to major service centers like Nepalgunj. Remittances and non-farm employment in nearby urban centers also contribute supplementally to household incomes.

5.2.4 Administration & Services

Ward No. 2 has a dedicated ward office with service contact details and local leadership. The current Ward Chairperson is Hari Kathayat, and the ward covers civic administration for all local needs within its 16.38 km^2 jurisdiction. The Ward is part of Parliamentary Constituency Banke-1 and Provincial Assembly Banke-1(B) following the 2017 constituency delimitation.

Municipal services such as health posts, schools, water pipelines, road maintenance, and social support programs are coordinated through Kohalpur Municipality's administrative structure, with Ward No. 2 being actively serviced from the municipal headquarters.

5.2.5 Challenges & Opportunities

Ward No. 2 faces typical challenges of peri-urban Terai settlements: rapid population growth, strain on infrastructure, and unmet service needs like sanitation and solid-waste management. Rising population- driven in part by internal migration- puts pressure on land, water, and public utilities. Seasonal flooding and environmental degradation are recurring concerns.

However, the ward's location at a strategic transport junction, compact population, and community diversity offer development potential. Opportunities include improving agricultural productivity through irrigation (e.g. from Rapti irrigation initiatives), promoting local markets, enhancing educational facilities, and integrating eco-tourism as a spill-over from nearby Banke National Park.

Ward No. 2 reflects the dynamic character of Kohalpur: escalating growth, cultural richness, and evolving livelihoods. It stands at the intersection of rural tradition and urban transformation, and with supportive planning it can harness its potential for sustainable and inclusive development.

Table 1: Summary of the project site

FEATURE	DETAIL
AREA	~16.38 km^2
POPULATION (WARD NO. 2)	~11,746
MUNICIPALITY POPULATION (2021)	~101,667 (24,183 households)
KEY ETHNIC GROUPS	Tharu, hill castes, Madhesi, Dalits, Muslims
MAIN ECONOMIC ACTIVITIES	Agriculture, livestock, small trade, labor
ADMINISTRATION	Ward Office 2, part of Kohalpur Municipality
TRANSPORTATION ACCESS	Ratna & Mahendra Highways
CHALLENGES	Infrastructure, environmental pressure, migration
OPPORTUNITIES	Irrigation, agro-diversification, services expansion

6. Findings

6.1 Demographical information

6.1.1 Age of respondent

The survey conducted in Ward No. 2 of Kohalpur Municipality included responses from 76 households, categorized into distinct age groups. The majority of respondents fell within the 41–50 age bracket, comprising 21 individuals, followed closely by the 51–60 group with 19 respondents. The 31–40 and 61–70 age groups each accounted for 13 participants, while the youngest group (20–30) had 7 respondents. The smallest representation was in the 71–80 age group, with only 3 individuals. This distribution highlights a middle-aged predominance among the respondents, suggesting that the survey findings may particularly reflect the perspectives and experiences of individuals in their 40s to 60s. The data provides valuable insights into the demographic composition of the surveyed households, which can inform targeted community initiatives or policy decisions in the area.

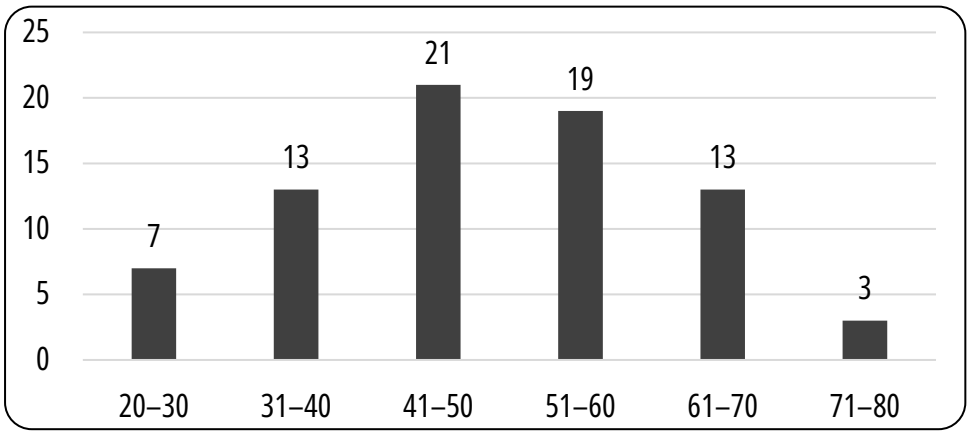

Figure 1: Age distribution of respondents in Mukti Nagar, Kohalpur, Banke

6.1.2 Gender of respondent

The household survey, also examined the gender distribution of respondents. The findings indicate that women slightly outnumbered men, comprising 43% of participants compared to 33% male respondents. The remaining 24% either did not specify their gender or identified differently. This distribution suggests that women were more actively involved in the survey process, possibly due to their role as primary household decision-makers or their greater availability during the survey period. Recognizing this demographic pattern is important to ensure that the perspectives captured in the survey reflect the views of both women and men within the community.

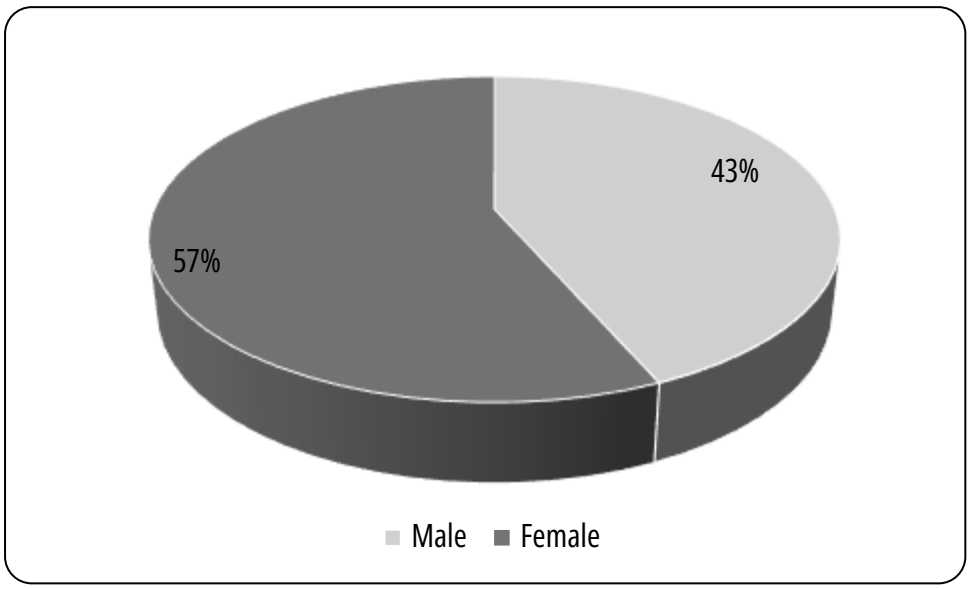

Figure 2: Gender of respondents

6.1.3 Migration history

The survey findings reveal a significant trend of migration in Ward No. 2 of Kohalpur Municipality, with most households having migration histories spanning several decades. The largest proportion—40 households—reported that their families migrated to the community between 21 to 30 years ago, indicating a major wave of settlement in the 1990s to early 2000s. Another 20 households migrated earlier, settling in the area 11 to 20 years ago, while a smaller group of 10 households arrived more recently, within the last decade. Only 6 households have roots in the community dating back 31 to 40 years, suggesting that long-term, multi-generational residents are relatively few. This migration pattern highlights the dynamic nature of the ward, with a substantial portion of the population being first- or second-generation residents. The data underscores how migration has shaped the community's demographic and social fabric, possibly driven by economic opportunities, urbanization, or displacement. Understanding this timeline is crucial for planning inclusive development initiatives that address the needs of both newer and long-standing residents.

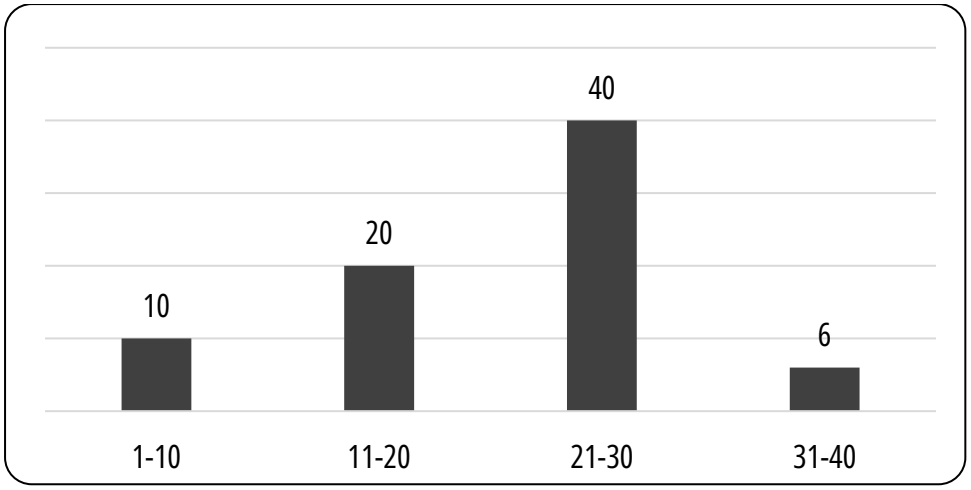

Figure 3: Migration history

6.2 Socio economic factors

6.2.1 Sources of income

The survey examined the primary sources of livelihood, revealing a strong reliance on agriculture and livestock farming. Specifically, 30 households reported agriculture and livestock as their sole occupation, while another 15 depended on agricultural labor, reflecting the community's deep-rooted connection to farming. In addition to agriculture, 11 households had members engaged in the service sector, and 6 households were involved in business. A few households reported mixed income sources: 1 household combining agriculture with business, 2 with remittances, and 5 with formal employment. Purely remittance-based livelihoods were minimal, with only 1 household depending entirely on income from abroad and 2 combining it with business activities. These findings highlight the dominant role of agriculture in the local economy while also indicating gradual diversification into services, trade, and overseas employment. The data provides a valuable foundation for designing development programs that both strengthen agricultural livelihoods and promote alternative income-generating opportunities.

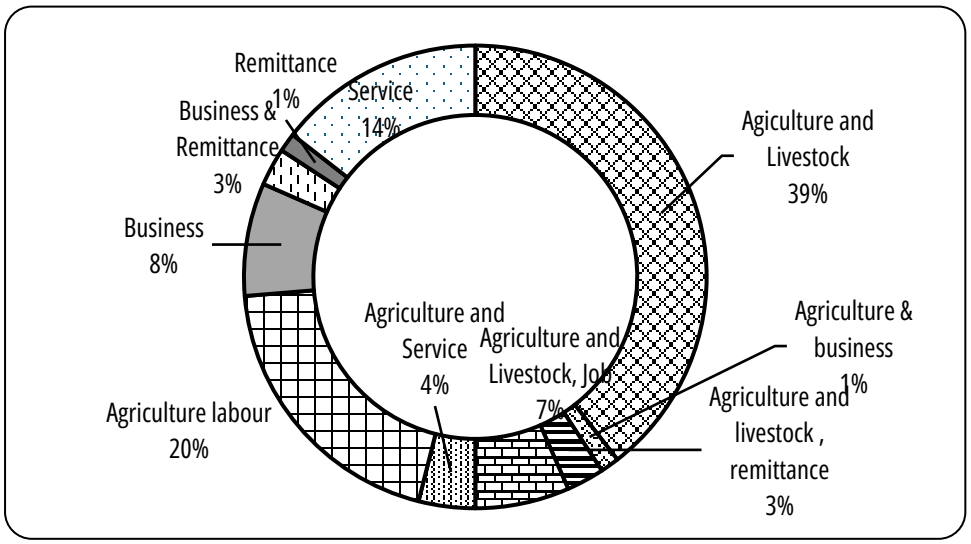

Figure 4: Major sources of income

6.2.2 Agricultural decision-making

The survey findings on agricultural decision-making reveal distinct gender-based patterns. Men predominantly lead agricultural decisions, with 39 households reporting male-dominated decision-making. Women play a significant but smaller role, taking the lead in 23 households. Notably, 14 households practice joint decision-making, where both men and women collaborate on agricultural choices. This data highlights a persistent gender disparity in agricultural leadership, with men more frequently in control. However, the presence of shared decision-making in nearly 20% of households suggests a gradual shift toward more inclusive practices. These insights are critical for promoting gender-sensitive agricultural programs that empower women while nurturing collaborative approaches to farming decisions in the community.

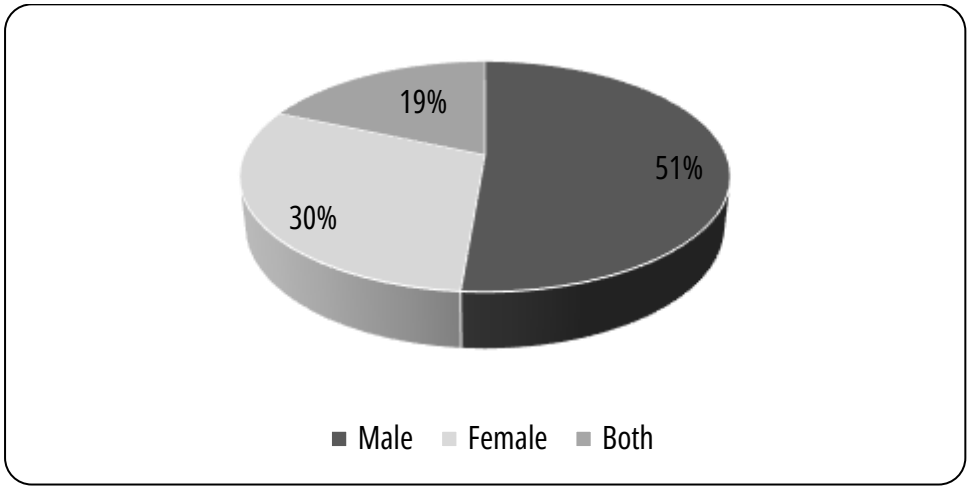

Figure 5: Agricultural decision-making

6.2.3 Agricultural Training Participation and Effectiveness

This survey analyzes training participation among 76 surveyed households, revealing critical gaps in agricultural extension services. Only 9 households (11.8%) reported receiving any form of agricultural training, while 67 households (88.2%) had no access to capacity-building programs. This stark disparity highlights significant shortcomings in training coverage and accessibility within the farming community.

The training distribution shows divers patterns in content and providers. Vegetable production emerged as the most common training topic, offered to 6 households through various institutions including Local Cooperative. Notably, two households received comprehensive training packages: one obtained three distinct trainings (mushroom cultivation from Central Training Centre Khajura, seed production from District Agriculture Branch, and nursery management from Bheri Old Citizen Agriculture Society), while another received dual training in composting and vegetable farming from a school-based program. Other specialized trainings included bee keeping (Kohalpur) and true potato seed production (Khajura Krishi Sakha).

The vegetable production training dominates (66.7% of trained households), the inclusion of mushroom cultivation, composting, and bee keeping shows promising diversification that should be expanded.

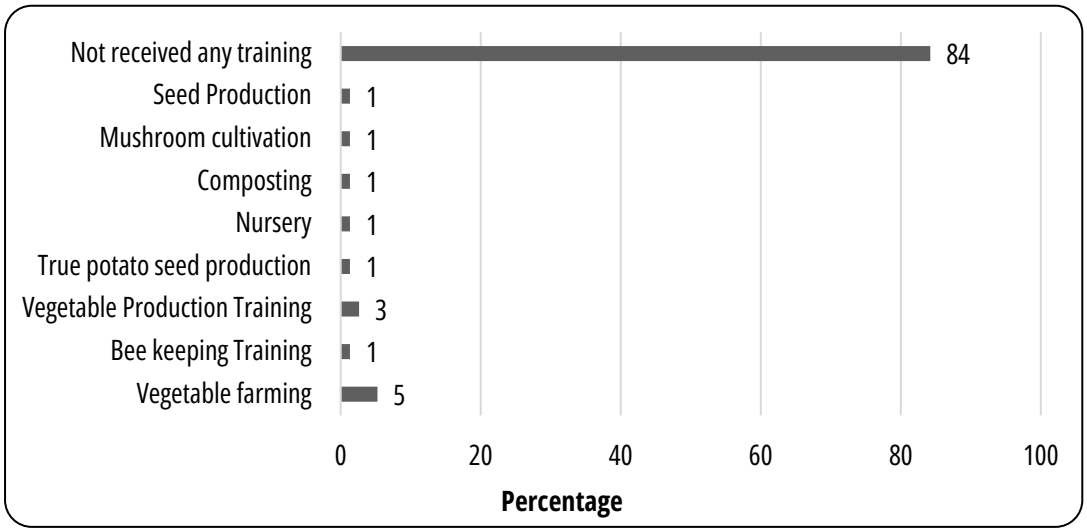

Figure 6: Agricultural Training Participation

6.3 Food Security

The survey tries to examine household-level agricultural production across four key crop categories: cereals, green leafy vegetables, other vegetables, and legumes. The analysis focuses on the duration of mandated crop sufficiency measured in months. This assessment reveals significant variations in agricultural productivity and food security across different household groups according to survey data from 76 households and focus group discussions.

6.3.1 Cereal food sufficiency

Cereal sufficiency is comparatively more robust among these. A sizable percentage of households attained sustained sufficiency, despite the fact that 19.7% of households reported no cereal output. The biggest percentage of households, 36.8%, indicated grain sufficiency for 9 to 12 months, while about 26.3% reported sufficient for 3 to 6 months (Figure 7). Although the lack of production in almost one-fifth of households suggests that better access or assistance for cereal growing is required in some places, these findings show that cereals are still a staple crop with significant coverage.

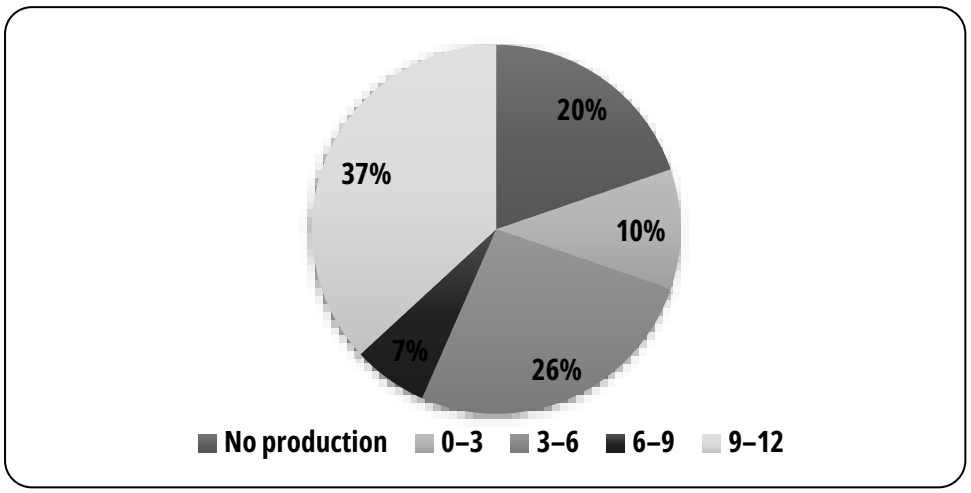

Figure 7: Cereal crop sufficiency in HHs in Mukti Nagar, Kohalpur, Banke

6.3.2 Green vegetable sufficiency

Green leafy vegetable production presents a distinct pattern, with certain households achieving notably longer sufficiency periods compared to others. The presence of both high and low values in this category suggests that factors such as irrigation access, pest management, and cultivation techniques play a significant role in determining production outcomes for these perishable crops. (Figure 7).

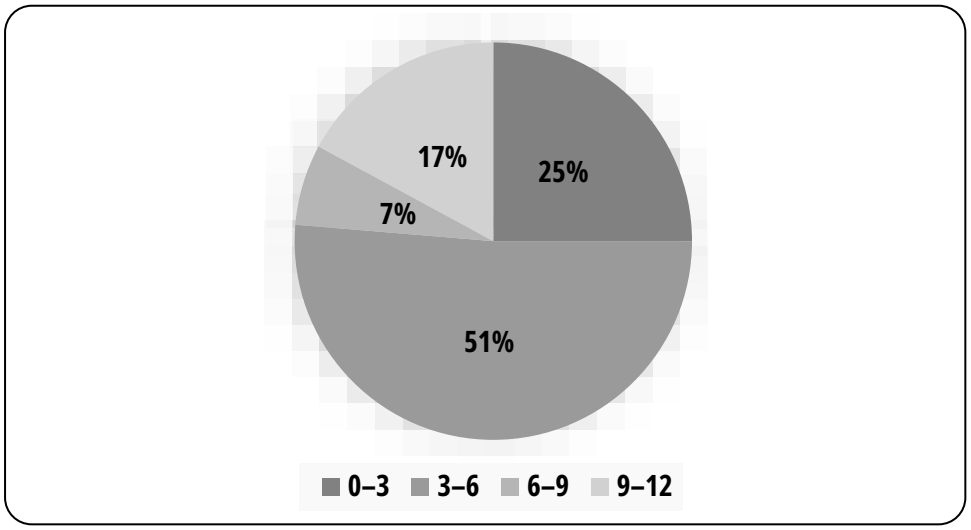

Figure 8: Green leafy vegetables sufficiency in HHs in Mukti Nagar, Kohalpur, Banke

6.3.3 Vegetable sufficiency

Similar to green leafy vegetables, other vegetables had a mid-range bias in sufficiency. While 23.7 percent of households reported being sufficient for just 0 to 3 months, the majority, 56.6 percent, reported being sufficient for 3 to 6 months. Merely 14.5% of homes were able to produce enough other veggies for nine to twelve months. These findings point to a lack of consistent vegetable production, which could have an impact on the nutritional intake and dietary diversity of households during off-seasons (Figure 8).

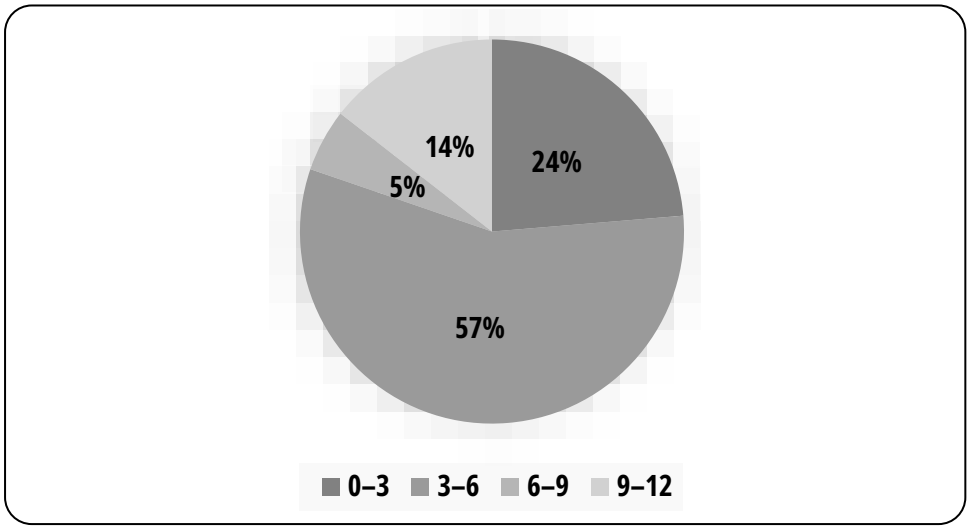

Figure 9: Other vegetables sufficiency in HHs in Mukti Nagar, Kohalpur, Banke

6.3.4 Legume

Out of the four categories, legume production was the lowest. 53.9 percent of the families surveyed did not grow any legumes at all. Given that beans are a vital source of plant-based protein, this is a serious concern. About 25% of the remaining households were able to sustain themselves for three to six months, 13.2% were able to do so for just 0 to three months, and less than 4% were able to do so for the entire year. This disparity draws attention to a serious nutritional vulnerability and points to the necessity of focused household-level assistance and encouragement of legume growing (Figure 9).

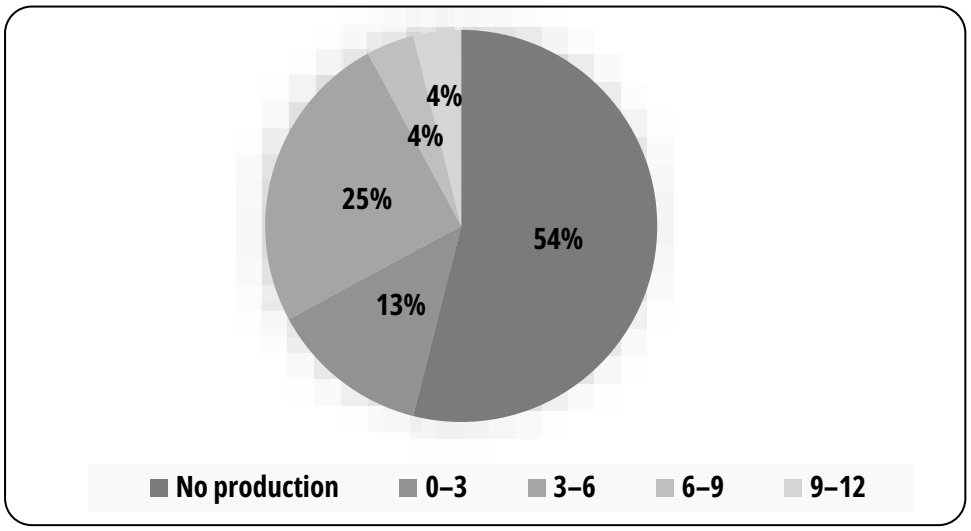

Figure 10: Legume sufficiency in HHs in Mukti Nagar, Kohalpur, Banke

The average highest level of sustainability is typically provided by vegetables (6.3 months), which are closely followed by green leafy vegetables (6.0 months) and grains (6.1 months). Legumes, on the other hand, fall far short, with an average sustainability of only 3.8 months. Legumes continue to be the weakest link among the four crop kinds, with the lowest maximum duration recorded, even if some households do manage full-year (12-month) sufficiency (Figure 10).

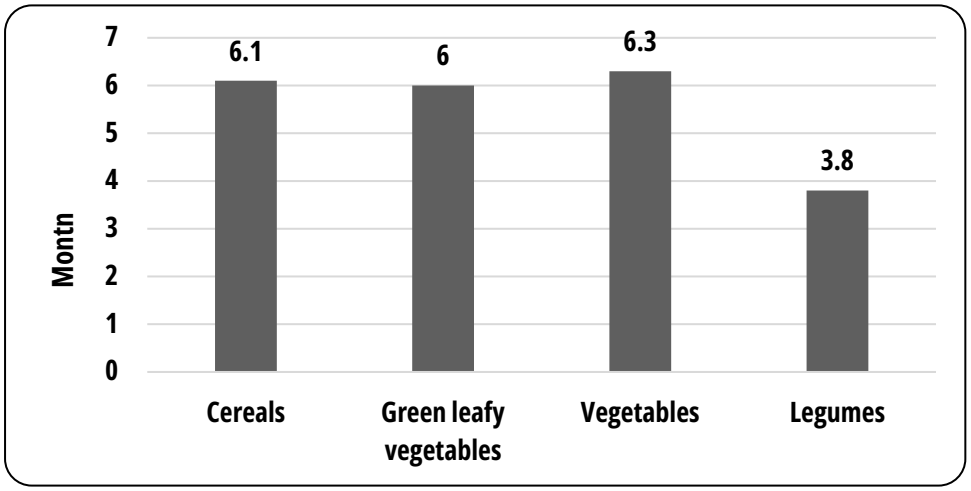

Figure 11: Average sufficiency of crops in HHs in Mukti Nagar, Kohalpur, Banke

6.3.5 Wild Edible and Crop wild relative sufficiency

In addition to cultivated crops, farmers also gather wild edible foods from natural habitats such as forests, wetlands, riversides, and other uncultivated lands. These wild food sources contribute, to some extent, to their food security. The collected information in household survey and farmers group discussion offers insights into the variety of wild and forest foods collected and consumed, along with their respective consumption methods. They use to collect the wild foods from nearby forest area and village sites. The data encompasses a diverse range of crops, including vegetables, fruits, pickles, and other preparations, reflecting the rich biodiversity and traditional dietary practices associated with wild food sources. (Table 2).

The survey listed 38 distinct wild foods, categorized primarily by their consumption methods. Vegetables dominate the list, with 22 entries, indicating their significant role in the diet. Examples include Mushroom, Jibre saag, and Bamboo, all consumed as vegetables. Fruits are the next most common category, with 11 entries such as Jamun, Amala, and Guava, often eaten raw or as part of culinary preparations. A smaller subset of foods, like Bayar and Karaili, is used for both fruits and pickles, highlighting their versatility Unique preparation methods, such as boiling (e.g., Tarul and Yam) or use in fish curry (Wild fish), further demonstrate the adaptability of these foods in local cuisines. One entry, Pipla, is noted as an herb, suggesting medicinal or flavoring uses (Figure 11).

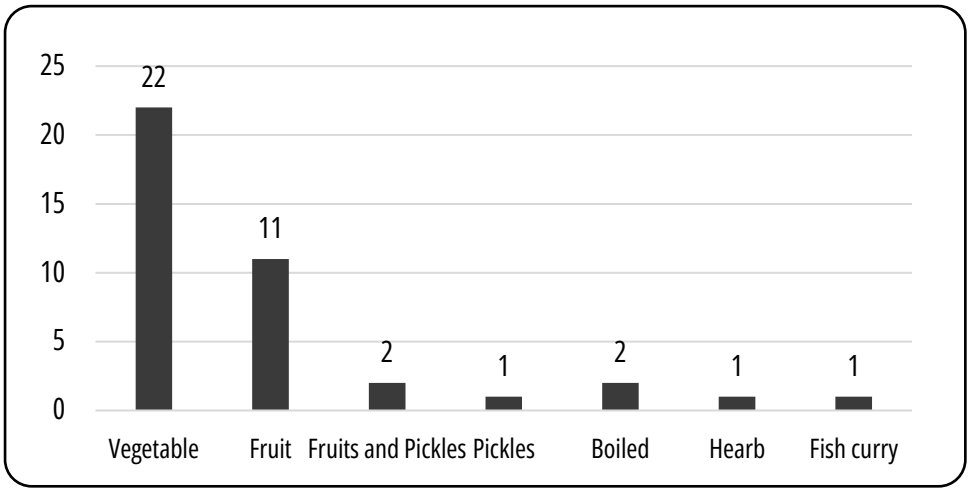

Figure 12: Wild edible foods from natural habitat

Table 2: List of wild edibles and CWR sufficiency

SN	Crop Name	Consume as	SN	Crop Name	Consume as
1	Mushroom	Vegetable	21	Mango	Fruit
2	Jibre saag	Vegetable	22	Tata	Fruit
3	Niuro	Vegetable	23	Koiralo	Vegetable
4	Faret	Fruit	24	Ek Patiya Saag	Vegetable
5	Jamun	Fruit	25	Banko	Vegetable
6	Amala	Fruit	26	Kurilo	Vegetable
7	Lemon	Fruit	27	Agai	Vegetable
8	Chamre	Vegetable	28	Guava	Fruit

SN	Crop Name	Consume as	SN	Crop Name	Consume as
9	Khajur	Fruit	29	Karaili	Fruits and Pickles
10	Bayar	Fruits and Pickles	30	Bamboo	Vegetable
11	Bel	Fruit	31	Yam	Boiled
12	Futki	Vegetable	32	Gittha	Vegetable
13	Daure	Vegetable	33	Amala	Vegetable
14	Agai	Pickles	34	Byamti	Vegetable
15	Tarul	Boiled	35	Ban Tarul	Vegetable
16	Khayksi	Vegetable	36	Pipla	Hearb
17	Gava	Vegetable	37	Kaluwa	Vegetable
18	Pyaksho	Vegetable	38	Kacchiu	Vegetable
19	Kusum	Fruit	39	Bagale	Vegetable
20	Karauti	Fruit	40	Wild fish	Fish curry

6.4 Agricultural Practices

6.4.1 Cropping patterns

The Terai region's distinctive agro-ecological features - its fertile alluvial soils, tropical-subtropical climate, monsoon-dependent rainfall, and developed irrigation systems - fundamentally shape local agricultural practices. These environmental factors interact with seasonal variations to create a dynamic yet organized cropping system characterized by both diversity and predictability.

During the monsoon season (June-October), rice emerges as the dominant crop, occupying over 70% of cultivated land. This cereal crop particularly thrives in low-lying areas where water accumulates, while the better-drained upland sections support maize, vegetables, and pulse crops like pigeon pea and black gram.

As the dry season commences (November-April), farmers transition to winter crops. Wheat and mustard become prevalent, especially in irrigated zones where these crops are frequently rotated. This period also sees expanded cultivation of cold-season vegetables (tomatoes, cauliflower, cabbage) and pulses (lentils, chickpeas), with production intensifying near urban centers to meet market demand.

The challenging summer months (March-June) witness more limited agricultural activity, with farmers concentrating on drought-resistant cucurbits (cucumbers, bitter gourds), maize, and fodder crops. This season's productivity remains constrained by high temperatures and unreliable water availability.

Beyond these seasonal patterns, a notable shift toward commercial agriculture is underway. Banana plantations are increasingly visible along the Rapti River floodplains, while mango orchards mark the peri-urban landscape. The Kohalpur area has developed particularly robust year-round vegetable production systems supplying nearby urban markets. Smaller-scale sugarcane cultivation persists, supported by connections to regional sugar processing facilities.

This evolving agricultural landscape demonstrates how traditional subsistence farming increasingly coexists with market-oriented production. The balance between these systems continues to respond to environmental factors (particularly water availability and climate conditions) while adapting to the economic opportunities presented by growing urban markets.

Table 3: The cropping pattern in project site

Months	Primary Crops	Secondary Crops
June–October	Rice, Maize, Pigeon pea	Soybean, Finger millet
November–April	Wheat, Mustard, Vegetables	Lentil, Potato
March–June	Cucurbits, Fodder, Maize	Green gram, Cowpea

Table 4: Crop calendar of project sites

SN	Activities	Months																
		Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1.	Rice																	
2.	Lentil																	
3.	Wheat, Nacked barley, Barley																	
4.	Amaranth																	
5.	Buckwheat																	
6.	Finger millet																	
7.	Broad Bean																	
8.	Potato																	
9.	Pigeon pea																	
10.	Winter bean																	

6.4.2 Production system

Kohalpur Municipality exhibits a diverse agricultural system shaped by its subtropical climate, fertile alluvial plains, and distinct seasonal rainfall patterns. The district's agricultural productivity relies on a well-defined cropping calendar synchronized with the monsoon rains from June to September and the subsequent dry winter period from October to May. This temporal distribution allows for intensive crop rotations across two primary land types: lowland paddy fields (khet) and upland fields (bari), maximizing annual production through sequential cultivation of complementary crops.

Rice forms the keystone of Kohalpur's agricultural system, cultivated extensively from June and harvested by October- November across the water-retentive lowlands. Farmers employ both improved high-yielding

varieties and traditional cultivars, with transplanting being the predominant establishment method during July when monsoon rains ensure adequate water availability.

Following the rice harvest, the agricultural focus shifts to winter crops cultivated from October to April, utilizing residual soil moisture supplemented by irrigation where available. Wheat emerges as the principal winter season crop, typically planted in October and harvested by April.

Lentil cultivation follows a similar winter growing cycle, with sowing occurring from late October through December and harvest completed by March. Grown primarily on drained paddy lands or upland fields, this pulse crop provides both nutritional and agronomic benefits through nitrogen fixation.

Maize serves as an important alternative crop, with planting typically occurring in two distinct cycles: the spring crop established from March to April and the monsoon season crop planted from June to July. The crop demonstrates particular suitability for upland conditions and often forms part of intercropping systems with legumes. Recent years have seen escalating challenges from fall armyworm infestations and irregular rainfall distribution, necessitating greater emphasis on pest surveillance and water conservation techniques.

Vegetable cultivation, including tomatoes, cauliflower, and leafy greens, has gained prominence as a high-value enterprise, with production cycles adapted to exploit market opportunities throughout the year.

Potato cultivation occurs primarily from October to February, with some areas supporting an additional late crop planted in February for May harvest. These high-input systems demand careful attention to irrigation scheduling and disease management, particularly for late blight control. The district's agricultural diversity extends to include oilseeds such as mustard, grown from November to March, and various pulse crops including pigeon pea, which demonstrates remarkable drought tolerance during its June to December growing period.

The Amaranth is cultivated both for grain and as a leafy vegetable, with varying sowing periods. Leafy types are planted multiple times between March and September, while grain types are typically established in July–August for harvest in October–January. The crop is often intercropped with vegetables. Insect pests and occasional drought stress pose significant production challenges.

6.4.3 The status of mandated crops

The dataset covers six primary crops amaranth, buckwheat, finger millet, lentil, broad bean, and pigeon pea, with detailed information on cultivation practices, production metrics, market behaviors, and usage patterns. The analysis reveals significant insights into current agricultural trends, challenges, and opportunities in the region.

Seed Sourcing and Agricultural Inputs

The data reveals distinct seed sourcing patterns across different crops. For amaranth, farmers primarily obtain seeds from agrovets (63%) and neighbors (34%), with minimal reliance on relatives (3%). Buckwheat cultivation shows greater diversity in seed sources, including specialized regional sources like Jumla and Bajura

(42% combined), alongside agrovets (30%) and neighbor exchanges (26%). This variation suggests buckwheat may have specific cultivar requirements or represents a more traditional crop with established local seed exchange networks.

Lentil cultivation demonstrates the most formalized input system, with 89% of seeds obtained from agrovets and only 8% from neighbor exchanges. The presence of institutional sources like NARC (National Agricultural Research Council) in 2% of cases indicates some degree of formal agricultural extension support for lentil cultivation. Broad bean cultivation follows a similar pattern to amaranth, with 44% seed sourcing from agrovets and 54% from neighbors, reflecting its status as a minor crop with less formal market integration (Table 11).

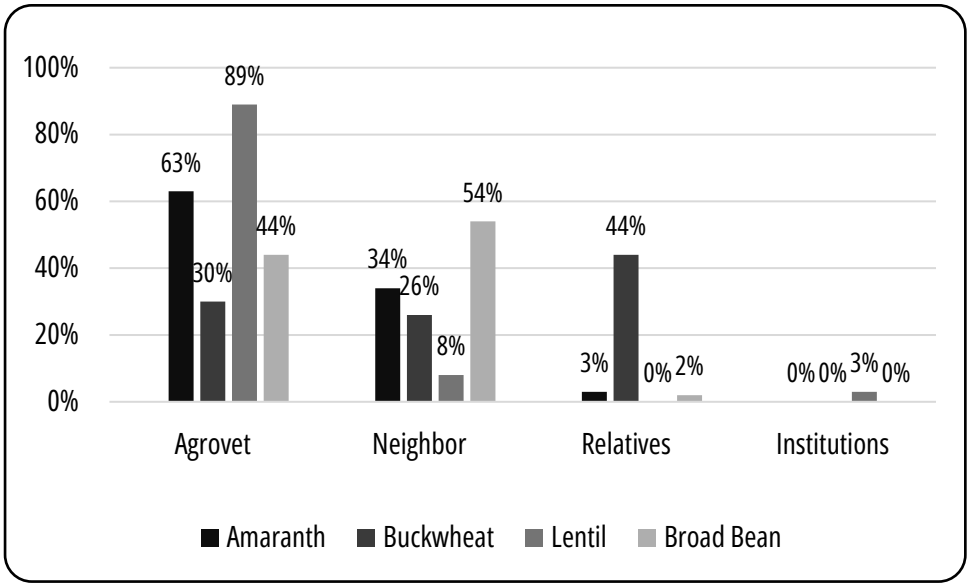

Figure 13: Seed Source Distribution

Market Integration and Commercialization

The dataset reveals low levels of market integration across most crops. Only 4.7% of amaranth growers and 8.3% of lentil cultivators reported selling their produce in markets. The few commercial operations tend to be larger in scale – the three market-oriented amaranth cultivators operated plots of 33.86, 84.65, and 33.86 square meters respectively, significantly above the average plot size. Similarly, commercial lentil operations averaged 2,254 square meters compared to 1,021 square meters for subsistence operations.

Buckwheat shows even lower market participation (2.2%), with only one operation (covering 84.65 square meters with 35 kg production) reporting market sales. Broad bean demonstrates minimal commercialization, with just one of 48 cultivators (2.1%) engaged in market sales (Figure 12). This pattern suggests that most agricultural production in project site remains subsistence-oriented, with commercial activity limited to larger operations focusing primarily on lentils and secondarily on amaranth.

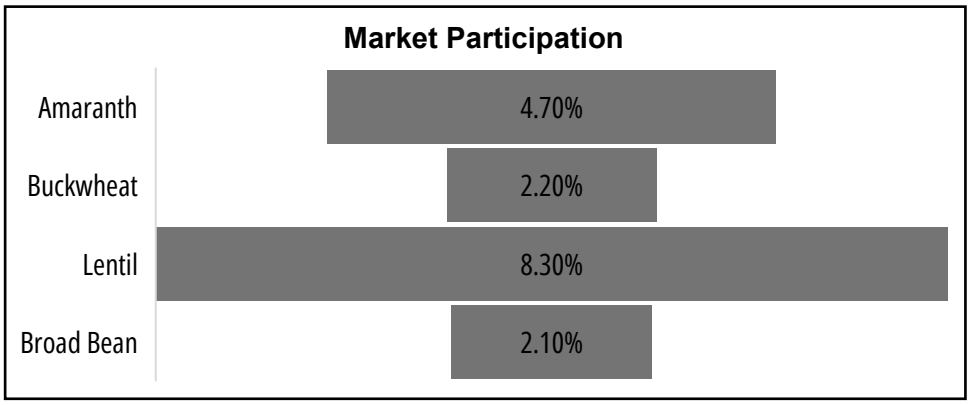

Figure 14: mandated crops selling in the market

Production Trends and Challenges

The data reveals trends for several traditional crops. Amaranth shows a strongly negative path, with 76% of cultivators reporting decreasing production and only 3% noting increases. Buckwheat follows a similar pattern, with 68% reporting declines and just 7% noting growth. These trends may reflect changing dietary preferences, labor constraints, or competition from other crops.

Lentil presents a more mixed picture, with 34% of cultivators reporting increasing production – particularly among larger operations. The stability of lentil production (42% constant) compared to other crops suggests it may be benefiting from better input access and market potential. Broad bean shows uniformly negative trends, with 87% of cultivators reporting decreasing production and none reporting increases, indicating a crop potentially in decline (Figure 13).

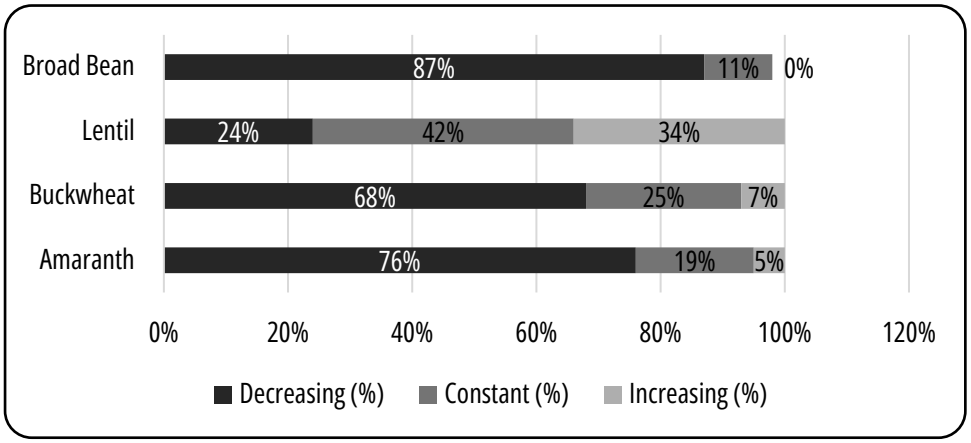

Figure 15: Production Trends

Dietary Consumption Patterns of Amaranth and Buckwheat

The survey data reveals significant insights into local dietary preferences regarding two traditional crops amaranth and buckwheat. The findings demonstrate a striking contrast in consumption patterns between these nutritionally important vegetables, with important implications for agricultural planning and nutritional interventions.

Amaranth consumption shows near-universal adoption among respondents, with 97% of surveyed individuals (74 out of 76) reporting regular consumption. This overwhelming preference suggests amaranth remains

deeply embedded in local food culture, likely due to its recognized health benefits, culinary versatility, and ease of preparation. The three respondents who reported not consuming amaranth represent a small but noteworthy exception that may warrant further investigation into potential reasons such as personal taste preferences, limited availability in specific areas, or temporary seasonal unavailability.

In contrast, buckwheat consumption presents a more complex picture. While still consumed by a majority (68% or 52 out of 76 respondents), the 32% non-consumption rate suggests this traditional crop faces greater challenges in maintaining its dietary relevance. The distribution of non-consumption appears scattered throughout the survey responses rather than clustered, indicating this may represent gradual dietary shifts rather than localized abandonment. The reasons behind this pattern could include changing taste preferences, greater preparation requirements compared to amaranth, or reduced availability in local markets.

Utilization Patterns and Nutritional Value

Crop utilization patterns show clear distinctions between leafy vegetables, pulses, and dual-purpose crops. Amaranth and buckwheat are predominantly used as leafy vegetables (95% and 89% respectively), with buckwheat also processed into flour in 11% of cases. Lentil and broad bean serve primarily as protein sources, with 100% of lentils used as pulses and broad bean split between vegetable (44%) and pulse (56%) uses.

Farmers consistently emphasized nutritional value as their primary motivation for cultivation across all crops. For amaranth and buckwheat, perceived health benefits (particularly for diabetes, blood pressure, and eye health) were universally cited. Lentil cultivators emphasized protein content and winter nutrition, while broad bean growers focused on general health and taste qualities.

Table 5: Primary Reasons for Cultivation

CROP	TOP-CITED REASONS
AMARANTH	Health benefits (diabetes, blood pressure, digestion), taste, nutrition
BUCKWHEAT	Health benefits, traditional use, adaptability to marginal soils
LENTIL	Protein source, winter nutrition, market potential
BROAD BEAN	Taste, protein content, dual use (vegetable & pulse)

Farmer willingness to cultivate mandated Crops

The survey data reveals strong farmer interest in preserving traditional crops, though with notable variations across different species. The findings demonstrate a complex relationship between agricultural heritage and contemporary farming decisions that warrants careful examination.

Amaranth emerges as the crop with the strongest cultivation support, with all 76 respondents (100%) expressing willingness to continue its production. This unanimous endorsement likely stems from its established role in local diets, as evidenced by previous consumption data, combined with its relative ease of cultivation. The complete absence of dissent regarding amaranth cultivation suggests it occupies a unique position in both agricultural practice and cultural identity within the region.

Buckwheat follows closely behind with 94% approval (71 of 76 respondents), indicating nearly universal recognition of its value despite previously documented production declines. The five farmers unwilling to cultivate buckwheat may face specific constraints such as limited suitable land, labor requirements, or market access challenges. The strong overall support suggests that buckwheat's production declines may relate more to external pressures than lack of farmer interest.

Faba bean shows the third highest willingness level at 89% (68 of 76 respondents). The eight farmers declining to cultivate faba bean may reflect practical considerations such as soil incompatibility or limited local demand. However, the overwhelming majority support indicates this legume maintains important agronomic or nutritional value in the current farming system.

Lentil presents a more complex picture with 76% approval (58 of 76 respondents). While still commanding majority support, the 24% unwillingness rate suggests lentil cultivation faces more significant barriers than the previously discussed crops. This may relate to water requirements, pest pressures, or competition from alternative cash crops. The substantial minority rejection contrasts with lentil's relatively stable production trends, indicating that current growers remain committed while others have abandoned cultivation.

Finger millet and naked barley show the weakest support at 46% (35 of 76) and 19% (14 of 76) respectively. These low figures likely reflect significant cultivation challenges or limited economic viability. The particularly poor showing for naked barley suggests it may be nearing complete abandonment, while finger millet maintains a tenuous foothold through niche applications or specific agroecological adaptations.

The data reveals several important patterns when examined holistically. First, crops with both high consumption rates and cultivation willingness (amaranth, buckwheat) demonstrate the strongest farmer commitment. Second, legumes show variable but generally strong support, likely due to their dual roles as food sources and soil enhancers. Third, cereal crops (particularly naked barley) appear most vulnerable to abandonment.

Table 5: Farmer Willingness to cultivate mandated crops

Crop	Willing to cultivate (count)	Willing to cultivate (%)	Unwilling (count)	Unwilling (%)	Priority classification
AMARANTH	76	100%	0	0%	Low Concern
BUCKWHEAT	71	93%	5	7%	Low Concern
FABA BEAN	68	89%	8	11%	Moderate Priority
LENTIL	58	76%	18	24%	High Priority
FINGER MILLET	35	46%	41	54%	Urgent Priority
NAKED BARLEY	14	18%	62	82%	Critical Priority

6.5 Indigenous and Traditional crop

6.5.1 Endangered Traditional Crop Varieties

The agricultural landscape of the project site is undergoing a significant transformation marked by the alarming disappearance of traditional crop varieties. This erosion of agricultural biodiversity presents multifaceted challenges to local food systems, cultural practices, and long-term ecological resilience. The most severely impacted crops include paddy (rice), barley, and maize, which have historically formed the foundation of both subsistence agriculture and local livelihoods. Rice varieties have experienced particularly steep losses, with 69 distinct landraces documented as disappearing, including culturally and agronomically significant strains such as Tilaki, Sam Jeera, Anadi Rato Dhan, and Thulo Mansuli. These traditional varieties were once extensively cultivated, valued not only for their distinctive flavors and aromas but also for their adaptation to local growing conditions and their integral role in cultural ceremonies and daily cuisine.

The displacement of these heritage rice varieties correlates strongly with the aggressive promotion of hybrid and high-yielding cultivars. While these modern varieties may offer short-term productivity gains, their dominance has come at the cost of genetic diversity that could prove crucial for climate adaptation and nutritional security. The naming conventions of the disappearing landraces often reflect their unique characteristics, with examples like Rato Anadi (red rice) and Jeera Masino (aromatic small gain rice) indicating the depth of localized agricultural knowledge being lost alongside the crops themselves.

Barley, though less dominant than rice in local agriculture, has similarly faced a dramatic reduction in varietal diversity. Indigenous types such as Jhuse Jau, traditionally used to sattu (roasted flour), provided essential winter nutrition and food security. However, changing market demands, shifting consumption patterns, and lack of institutional support have led to their near-abandonment. This pattern extends to maize landraces including Kalo Makai, Seto Makai, and Paisey Makkai, which were once dietary staples processed into traditional foods like roti and dhindo. These varieties are being rapidly replaced by hybrid maize bred for yield maximization, despite often lacking the taste profiles, nutritional benefits, and environmental adaptability of their indigenous counterparts (Annex VII)

The decline extends beyond cereal crops to include legumes, vegetables, and other cultivated species. Particularly vulnerable are crops represented by single remaining landraces, such as certain varieties of ash gourd and sponge gourd, where complete genetic erosion appears imminent. This broad-based loss reflects a troubling trend toward agricultural homogenization, where short-term productivity is prioritized at the expense of biodiversity, potentially compromising the food system's capacity to adapt to future environmental and climatic challenges.

The consequences of this varietal loss are profound and multidimensional. From an ecological perspective, it reduces the genetic reservoir available for future crop improvement and climate adaptation. Nutritionally, it may lead to decreased dietary diversity, as traditional varieties often contain unique micronutrient profiles.

Culturally, it represents the erosion of generations of agricultural knowledge and practices tied to specific crop varieties.

6.5.2 Diversity of Fruit Species in Local Orchards

The survey found a diverse array of fruit species being cultivated, with distinct preferences in plant preserving methods that reflect both traditional practices and modern agricultural interventions. An impressive variety of fruit species maintained in local orchards, 87% (69 farmers) cultivate indigenous or local fruit orchards, with mango (72%) and guava (63%) dominating. Other significant species include lemon (Lemon), papaya (Papaya), and litchi (Litchi), along with less common but culturally important varieties such as Jamun (black plum), Amilo (Sour fruit), and Bayar (Indian plum). The presence of both tropical staples and regionally-specific fruits like Katahar (Jack fruit) and Kushum (Schleichera oleosa) demonstrates the ecological adaptability of local orchard systems. Notably, some exotic species like dragon fruit appear in the records, indicating gradual introduction of new crops into traditional cultivation systems.

Plant Sourcing Patterns and Their Implications

The data reveals four primary sourcing channels for orchard plants: self-propagation (accounting for roughly 45% of instances), commercial agrovets (25%), government distribution programs (20%), and community networks through neighbors (8%). The high prevalence of self-propagation, particularly for species like guava, mango, and lemon, suggests maintained traditional knowledge in plant propagation techniques. However, the substantial role of agrovets in supplying plants, especially for commercially valuable species like litchi and improved mango varieties, indicates growing market integration in orchard establishment. Government distribution programs emerge as crucial for certain species, particularly those that may be harder to propagate locally like peach and pomegranate.

The geographic annotations in some responses (e.g., Surkhet, Kohalpur) hint at regional exchange networks for specific species, with Katahar and Bayar showing particular spatial patterns in sourcing. The limited but notable involvement of NGOs in distributing plants like pomegranate and jackfruit suggests targeted interventions by development organizations in orchard diversification.

6.5.3 Indigenous Crop Varieties and Their Characteristics

The analysis of indigenous crop varieties reveals a diverse array of cultivated species, each possessing distinct characteristics that contribute to their agricultural and nutritional value.

Rice appears with a single documented variety, Radha-4, which demonstrates two key characteristics: early maturation and drought resistance. These traits make it particularly valuable in regions with unpredictable rainfall patterns or limited irrigation capacity. The maize category features only the Arun variety, noted for its palatability and early maturation period, suggesting its cultivation may be prioritized for both subsistence and market-oriented production.

Cucumber varieties show a more localized pattern, with the "Local" designation indicating regionally adapted strains. These exhibit insect resistance and absence of bitter taste, though they are associated with lower yields

compared to potentially improved varieties. The Sponge Gourd category presents greater diversity, with multiple varieties including Sano, Thulo, Chitpite, Ghirpite, Rorhai, and Satho Chitpite. These share common positive attributes such as high yield, good taste, and health benefits, while some demonstrate additional advantages like low fertilizer requirements, insect resistance, or disease resistance. The frequent mention of health benefits across varieties suggests this crop holds particular nutritional significance in local diets.

Leguminous crops display considerable variety, particularly within the Bean and Simi categories. Bean varieties include standard Simi, Hiudey Simi, and Latte Simi, all sharing characteristics of high yield and good taste, with some specifically noted for health benefits and use as legumes. The Simi category shows similar patterns, with Hiudey Simi, Siltung, and Hidudo Simi varieties all prized for taste and productivity. The consistent emphasis on yield and taste across legume varieties indicates their dual role in both household nutrition and potential market production.

Tuber crops feature Yam and Wild Taro (Jaluko), though specific variety names are often unspecified. These crops are universally described as high-yielding and tasty, with Wild Taro additionally noted for health benefits and vitamin content. The Ash Gourd appears without variety specifications but is consistently characterized by high yield, good taste, and multiple uses ranging from vegetable consumption to ceremonial offerings during Dashain puja.

Leafy vegetables and herbs present a distinct profile. Bethe Saag (Lamb's Quarters) includes Thulo, Sano, and Rato Bethe varieties, primarily valued as nutritious leafy vegetables with some varieties specifically noted for winter consumption to prevent colds. Mint and Dill stand out for their medicinal applications, used in chutneys, juices, and soups, while also serving culinary purposes. Amaranth appears in Thulo, Sano, and Rato varieties, with consistent mentions of health benefits, good taste, and low fertilizer requirements, making it particularly suitable for low-input agriculture.

The Solanaceae family is represented by Tomato and Brinjal. Tomato varieties include Sano Tamatar, valued for high yield, pickle suitability, and good taste, while the locally adapted Brinjal is noted simply for being delicious and productive. Allium crops feature Garlic and Onion, both recognized for their health benefits and medicinal uses, with Garlic additionally noted for easy cultivation through mulching techniques.

Cucurbit crops beyond Sponge Gourd include Pumpkin, Bottle Gourd, and Ridge Gourd. Pumpkin is consistently described as high-yielding, tasty, and healthy, with its leaves (Munta saag) specifically noted for health benefits. Bottle Gourd is highlighted for its digestive benefits and blood pressure regulation properties, while Ridge Gourd shares the common cucurbit traits of high yield and taste, with added insect resistance.

Other notable crops include Pea (Thulo, Sano, and Local Kerau varieties), valued for high yield, good taste, and dual use as both vegetable and pulse; Lentil (Sano/Thulo Masuro and Local Musuro), appreciated for good harvests and rainfed cultivation suitability; and Pigeon Pea, recognized simply as a healthy food source. Coriander stands out among spices for its aromatic qualities, use in pickles, and medicinal applications, while Samphu is noted for medicinal value and low input requirements.

The result reveals several overarching patterns in indigenous crop valuation. High yield and good taste emerge as nearly universal positive attributes across all crop categories, reflecting the dual priorities of productivity and palatability. Health benefits are frequently cited, particularly for leafy greens, cucurbits, and alliums, suggesting a strong traditional knowledge base regarding nutritional and medicinal plant properties. Low input requirements and stress tolerance (drought resistance, insect/pest resistance) are commonly mentioned advantages, indicating these crops' suitability for sustainable, low-external-input farming systems.

The frequent lack of variety names for many crops, replaced by "local" designations, indicate true local landraces without distinct variety names.

This analysis highlights the rich agricultural biodiversity maintained in the study region, with each crop variety representing a unique combination of agronomic, nutritional, and potentially cultural values. The consistent themes of productivity, taste, and health benefits across crop categories highlight the sophisticated traditional knowledge systems guiding crop selection and cultivation practices in indigenous agricultural systems.

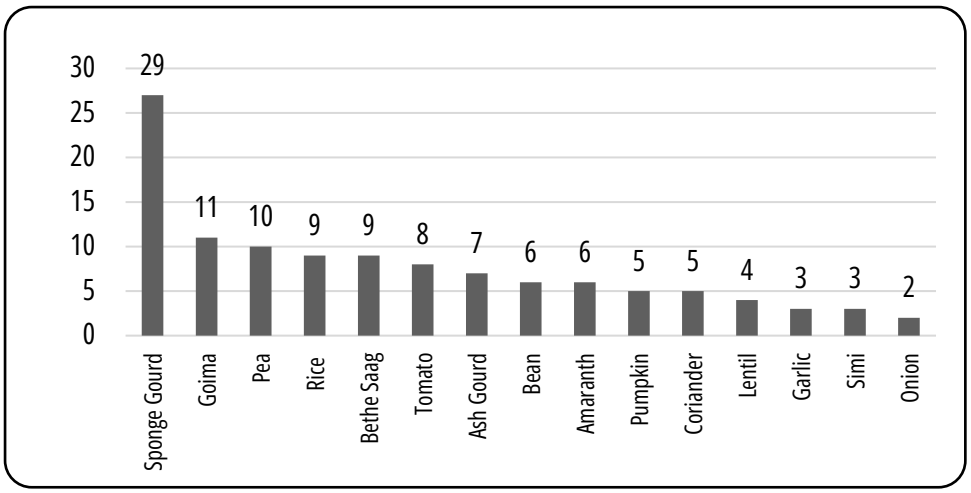

Figure 16: The best indigenous crops in the area

6.5.4 The consumption trend of indigenous and local crop

The baseline survey and Focused Group Discussions focused on three key dimensions: the composition and preparation of traditional dishes, their cultural and seasonal contexts, and the sources of ingredients, whether cultivated or foraged. This tripartite approach revealed intricate patterns in culinary customs, crop utilization, and ritual practices, offering a holistic understanding of how food traditions are embedded within the region's ecological and social systems.

The culinary traditions of the project site embody a profound connection between the community's agricultural practices, seasonal cycles, and cultural identity. The survey has documented an extensive repertoire of traditional dishes prepared from indigenous crops including Colocasia (tarul), sweet potato, yam, and millet. These culinary practices, deeply intertwined with cultural celebrations such as Dashain, Tihar, Maghi, and Teej, demonstrate not only the community's reliance on locally sourced ingredients but also the preservation of ancestral knowledge systems. This report presents findings from structured interviews that examine traditional

foodways, their seasonal and cultural significance, and the vital role of indigenous crops in maintaining both dietary diversity and agricultural heritage.

The survey documented more than fifty distinct traditional dishes, with Selroti (fermented rice doughnuts), Dhikri (steamed millet or rice dumplings), and Fini (rice noodles) emerging as culinary staples. These are commonly served with accompaniments such as Dahi Chiura (beaten rice with yogurt), Masu (spiced meat curry), and Til ko Laddu (sesame sweets). The data indicates that 87% of households prepare at least three traditional dishes during major festivals, underscoring their cultural importance. Seasonal and ceremonial contexts significantly influence food preparation: Dashain and Tihar celebrations feature Selroti alongside Khurma (fried dough twists) and Kheer (rice pudding) in 92% of households, while winter festivals like Maghi and Sankranti highlight roasted or boiled preparations of tarul, sweet potato, and yam, typically accompanied by Til ko Laddu and Khichadi (black gram-rice porridge). The monsoon festival of Asar 15, marking paddy transplantation, is celebrated with Dahi Chiura and fresh mangoes as symbols of abundance. Gender-specific rituals such as Teej emphasize consumption of Kheer and Fini during fasting periods. Beyond festive occasions, daily diets continue to incorporate indigenous crops through preserved foods like Sinki (fermented radish) and Jaad (fermented bamboo shoots), demonstrating sophisticated traditional preservation methods.

The culinary system relies fundamentally on twelve indigenous crops particularly adapted to the local agro-climatic conditions. Colocasia (tarul), utilized by 78% of households, appears in various preparations including boiled dishes, curries, and snacks. Sweet potato (72%) and yam (68%) are commonly roasted or incorporated into curries, while millet (65%) serves as the base for Dhikri and porridge. Sesame (61%) and pumpkin (54%) feature prominently in sweets and stews. These crops demonstrate remarkable resilience, requiring minimal irrigation, with households in Bikash Nagar and Shakti Nagar specifically noting the drought tolerance of millet and colocasia in marginal soils.

The synchronization of culinary practices with agricultural and cultural calendars creates a harmonious relationship between land use and tradition. The monsoon period features Dahi Chiura celebrations coinciding with paddy transplantation, while the winter harvest festival of Maghi centers on roasted tubers and sesame-based confections. Ritual observances such as Janai Purnima (sacred thread ceremony) include Kwati, a nine-bean soup prepared by households like number 56 in Krishna Nagar, valued for its perceived health benefits during the rainy season. Household 19 in Mukti Nagar maintains the tradition of preparing Marshe (Amaranth) ko Laddu for Dashain offerings, a practice sustained across generations. Regional variations further enrich the culinary landscape, with Bikash Nagar's Bhubreroti (buckwheat flatbread), Ananda Nagar's Sinkamari (stuffed dumplings during Teej), Shakti Nagar's foraged Ghongi (snail curry), and Krishna Nagar's nutrient-rich Anadi ko Bhat (red rice) reflecting both microclimatic diversity and historical exchange networks.

Despite this richness, the culinary heritage faces considerable challenges. A concerning amount of household report decreased cultivation of traditional crops like millet, colocasia, and yam over the past decade. This decline stems from multiple factors including market pressures favoring cash crops like maize, the labor-intensive nature of processing traditional grains and generational knowledge gaps. Only 22% of respondents

under thirty could describe traditional fermentation techniques without elder assistance, and Household 70 observed younger family members preferring instant noodles to traditional Dhikri. Commercialization has further eroded practices, with Household 45 opting for commercially produced Selroti during festivals due to time constraints.

In synthesis, the culinary traditions of the project site represent a vital repository of ecological adaptation and cultural continuity. The documented decline in indigenous crop cultivation and traditional knowledge transmission necessitates urgent conservation measures. Strategic interventions combining community engagement, policy support, and innovative adaptation of traditional practices could ensure the preservation of dishes like Dhikri, Kwati, and Til ko Laddu as living traditions rather than historical artifacts. As poignantly expressed by Household 42, "Our ancestors' crops sustained us through difficult times; to forget them would be to sever our connection to the past." This report advocates coordinated efforts to sustain these culinary and agricultural traditions, ensuring their vitality for future generations while maintaining their cultural and ecological relevance in a changing world.

6.5.5 Seed sourcing patterns for Indigenous crop varieties

The dataset presents a comprehensive analysis of seed acquisition practices among 76 households regarding indigenous crop varieties. The findings reveal a remarkably consistent pattern across the surveyed population, with nearly universal reliance on informal local networks and commercial channels for obtaining seeds, coupled with a complete absence of institutional or community-based seed sourcing.

A striking 96% of households (73 out of 76) reported utilizing a combination of neighbor exchanges, agrovet purchases, and haat bazar (local market) acquisitions as their primary seed sources. This tripartite informal system demonstrates the continued vitality of traditional seed exchange mechanisms operating alongside commercial distribution channels. The remaining 4% of households (3 cases) relied exclusively on agrovets and local markets, excluding neighbor networks from their seed procurement strategies.

The absolute uniformity of negative responses regarding organizational and community seed bank sources presents a particularly significant finding. All 76 households reported never having obtained seeds from either formal agricultural organizations or community seed banking systems. This complete lack of engagement with institutional seed sources suggests either the non-existence of such programs in the study area or profound barriers to their accessibility and utilization by local farmers.

The data reveals several important implications for agricultural sustainability and biodiversity conservation. First, the heavy dependence on neighbor networks indicates the persistence of traditional knowledge-sharing and seed preservation practices at the community level. Second, the prominent role of agrovets and local markets suggests these commercial channels have become essential components of the indigenous seed distribution system, potentially offering both opportunities and challenges for maintaining crop diversity. Third, the total absence of institutional involvement raises questions about the adequacy of formal support systems for preserving indigenous crop varieties.

These findings highlight a critical gap in agricultural extension services and biodiversity conservation efforts. While traditional systems demonstrate resilience in maintaining seed flows through informal channels, the complete lack of institutional support suggests vulnerability in the long-term preservation of indigenous genetic resources. The data underscores the need for developing more integrated approaches that strengthen existing community-based systems while establishing connections to formal conservation initiatives.

The study reveals a seed ecosystem operating almost entirely outside formal agricultural frameworks, maintaining indigenous crop varieties through localized networks and commercial channels. This situation presents both challenges and opportunities for agricultural development strategies aiming to preserve crop biodiversity while supporting farmer livelihoods. Future interventions might consider building upon the existing neighbor-exchange systems while establishing linkages to institutional resources that could enhance the resilience and diversity of local seed systems.

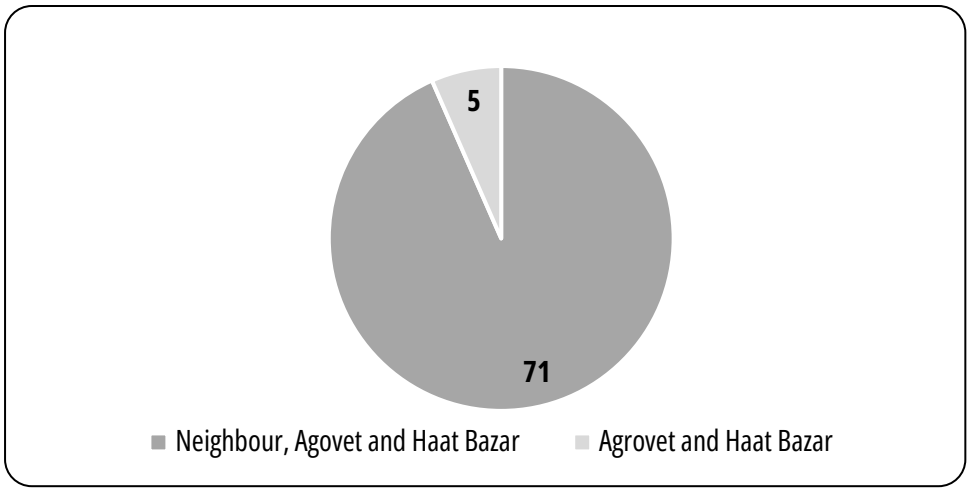

Figure 17: Seed sourcing patterns for traditional and indigenous crops

6.5.6 Indigenous Seed Selection Practices and Decision-Making

The analysis of indigenous seed selection methods reveals a well-established system of farmer-led quality control, demonstrating sophisticated traditional knowledge in plant genetic resource management. The dataset shows unanimous involvement of farmers themselves ("Self") in the seed selection process, with no reported cases of external or institutional participation in these critical agricultural decisions.

A comprehensive examination of selection methodologies uncovers several consistent quality parameters across households. Maturity of seeds emerges as the most fundamental criterion, explicitly mentioned by 42 households (55%), with frequent descriptors including "well matured," "ripened," and "dried." This emphasis on physiological maturity reflects deep understanding of seed viability and storage requirements. Health and robustness constitute the second major selection pillar, referenced by 34 households (45%), with specific attention to disease-free status (18 households) and pest resistance (7 households). The prevalence of these criteria suggests farmers prioritize both immediate planting success and long-term field resilience.

Physical seed characteristics form another critical dimension of selection protocols. Twenty-three households (30%) specifically mentioned selecting bold (large) seeds, while 15 households (20%) incorporated sieving or winnowing processes to ensure uniformity. These practices indicate empirical knowledge of the correlation between seed size and vigor, as well as the importance of removing inert matter for optimal storage. Eight households (11%) reported using phenotypic selection, demonstrating conscious application of selective pressure for desirable agronomic traits.

The post-harvest processing methods reveal equally systematic approaches. Drying practices are near-universal, mentioned by 39 households (51%), with some specifying 2-3 day drying periods. Sorting appears as a universal final step, implemented through various methods including manual selection (27 households), sieving (19 households), and winnowing (3 households). Two households reported innovative traditional preservation techniques, mixing seeds with neem leaves and mustard cake for pest control – a practice demonstrating integrated pest management knowledge.

Notable exceptions to active selection appear in 4 households (5%) that rely exclusively on purchased seeds, suggesting either specialization in non-seed-producing crops or potential erosion of traditional seed-saving knowledge in these cases. The data shows no variation in decision-making authority, with all seed selection being conducted autonomously by farmers without input from agricultural extensions, community groups, or other external actors (Figure 17)

These findings collectively portray a self-reliant, knowledge-intensive seed selection system where farmers serve as both practitioners and custodians of crop genetic resources. The uniformity of self-directed selection across all households, regardless of specific methodology, underscores the deeply embedded nature of seed sovereignty in local agricultural practice. The technical specificity of selection criteria – spanning physiological, pathological, and physical parameters, reflects generations of accumulated agroecological wisdom tailored to local growing conditions and crop requirements.

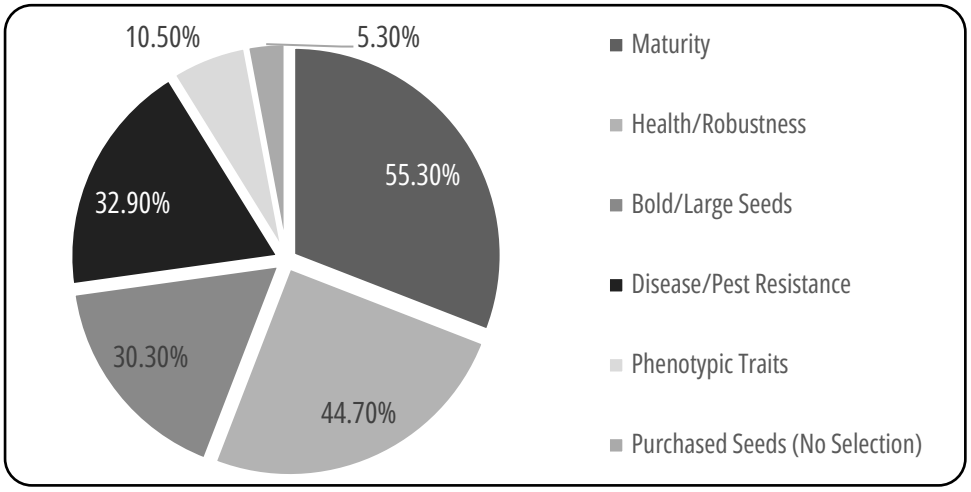

Figure 18: Seed selection criteria of local indigenous crops

6.5.7 Indigenous seed storage practices

The survey reveals four primary crop storage techniques in use, each relying on specific locally available materials suited to the stored crop type. Traditional Bhakari (mud granary), constructed from mud and bamboo, is mainly used for storing paddy and wheat. This method offers a cool, dry environment that helps reduce pest infestation, though it has limited durability and capacity. Hanging or dried bunches, applied to maize storage, involve suspending dried cobs or produce under roofs or in shaded areas to allow airflow and protect against rodents, though they provide minimal protection from moisture. Airtight containers, used for wheat and lentil are made from plastic or metal and prevent moisture ingress and pest attacks, ensuring longer shelf life, but require higher investment and proper sealing. The most dominant approach, botanical additives, is used across all crops. This method employs natural pest-repelling materials such as neem leaves, titepati (Artemisia), mustard cake, or ash, mixed with stored grains to maintain quality. It is highly favored for being cost-effective, environmentally friendly, and readily accessible, making it the backbone of household-level grain preservation in the area.

Grain and crop storage materials

The most widely adopted method is the use of botanical additives, applied across all crop types, which accounts for 86.10% of total storage practices. This method likely involves incorporating locally available plant-based substances, such as neem leaves or other insect-repelling materials, to protect stored produce from pests and spoilage.

Traditional Bhakari storage is used primarily for paddy and wheat, representing 6.30% of storage practices. Bhakari structures provide a relatively low-cost and locally adaptable option, though their adoption rate is notably lower compared to botanical methods.

Hanging or dried bunches—a practice suitable for crops that can be stored in their dried form, such as maize. account for 2.50% of total usage. This method is simple and effective for short-term preservation, especially in households with limited storage infrastructure.

The use of airtight containers for storing wheat and lentil comprises 5.10% of the total (Figure 18). Airtight storage minimizes moisture ingress and pest infestation, thereby prolonging shelf life, though its lower prevalence suggests limited access to such containers or higher associated costs.

Overall, the data reflects a strong reliance on botanical preservation techniques, with relatively limited utilization of physical or structural storage systems. This pattern underscores the importance of locally available, low-cost preservation methods in sustaining household food security, while also indicating potential opportunities for improving access to modern storage materials to enhance crop longevity and quality.

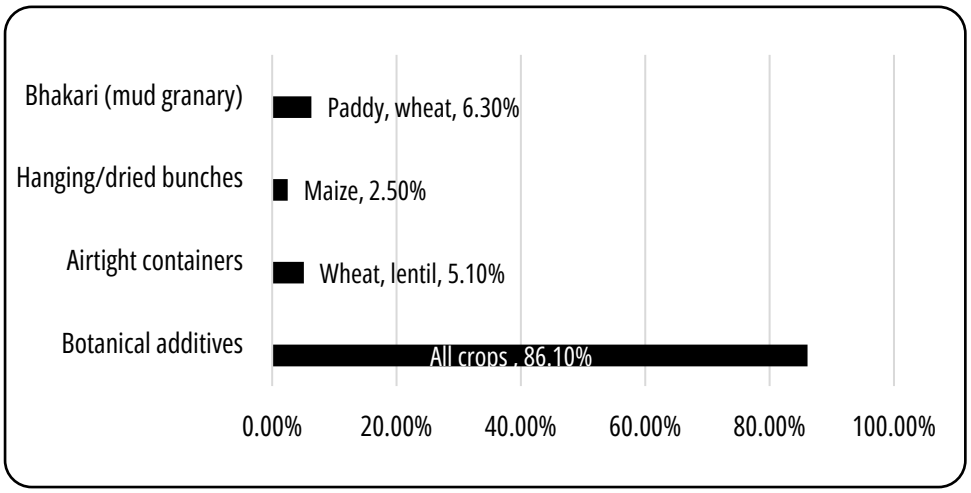

Figure 19: Grain and Crop Storage materials

Grain and crop storage techniques

The diagram illustrates the distribution of different storage methods used for various crops in the surveyed area, highlighting the reliance on traditional and botanical techniques.

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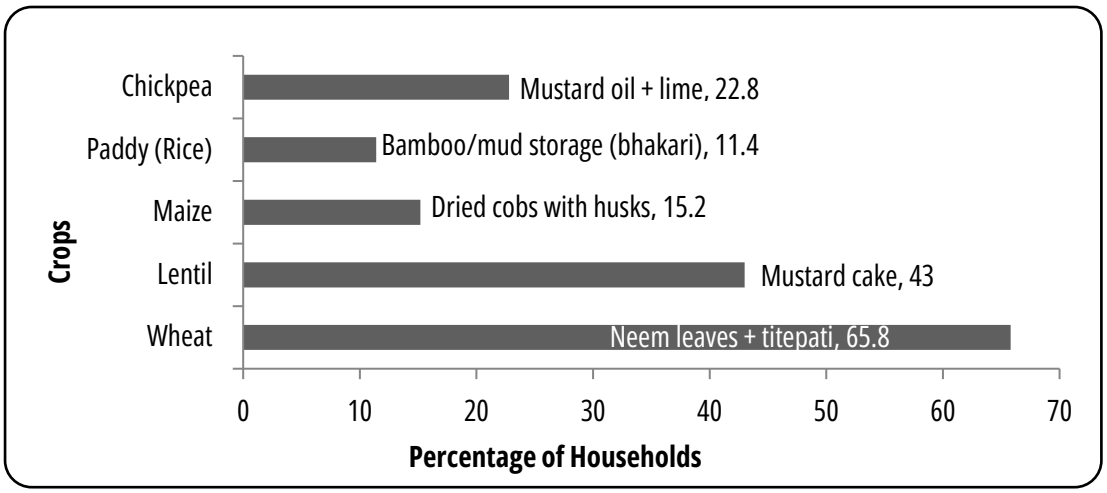

Figure 20: Preservation Techniques

7. Climate change impact and adaptation strategy

7.1 Climate Change Impacts on Agriculture in Kohalpur Municipality

A KII survey is carried out to assess climate change impact In Kohalpur Municipality. The KII shows the agricultural sector is experiencing significant climate-related challenges that are disrupting traditional farming systems. Farmers are confronting substantial changes in precipitation patterns, including delayed and irregular monsoon onset, which has severely affected established planting schedules and compromised crop establishment rates. Extended dry periods during critical growth stages have become more frequent, creating severe moisture deficits in rainfed agricultural areas and resulting in notable yield reductions for staple crops including paddy, wheat, and maize. Conversely, intense unseasonal rainfall events have led to flooding and waterlogging, particularly in low-lying agricultural lands, causing damage to standing crops and exacerbating post-harvest losses.

Temperature increases have introduced additional complications, with elevated evapotranspiration rates diminishing soil moisture retention and substantially increasing irrigation requirements. The changing climate has also facilitated more frequent pest and disease outbreaks, with warmer winter temperatures and erratic humidity levels contributing to increased incidence of stem borers in maize and blight infections in pulse crops. Heat stress during sensitive reproductive phases has emerged as a particular concern, negatively affecting grain formation in wheat and lentil crops.

While these climate impacts reflect broader patterns observed throughout Nepal's Terai region, Banke District exhibits several distinctive vulnerabilities. Situated in the western Terai, the district experiences characteristically delayed monsoon onset compared to eastern and central Terai regions, resulting in a compressed growing season and heightened drought risk during crucial crop development stages. The district's geographical proximity to semi-arid zones renders its agricultural systems particularly susceptible to prolonged dry spells - a contrast to eastern Terai districts where flood-related challenges dominate. Furthermore, Banke faces unique cross-border climatic influences, including intense heatwaves and dust storms originating from northern India, which damage emerging crops and degrade soil fertility. This combination of drought

susceptibility, flash flood vulnerability, and exposure to extreme heat events creates a particularly complex climate risk profile that distinguishes Banke from other Terai regions.

7.2 Climate adaptation strategies in smallholder agriculture

The dataset reveals a comprehensive array of farmer-led adaptation measures to mitigate weather uncertainties, demonstrating both traditional knowledge and innovative responses to increasingly variable climatic conditions. Analysis of 79 households shows distinct patterns in climate vulnerabilities and adaptive strategies, with rainfall variability emerging as the predominant challenge, affecting 89% of reported cases (70 households), followed by frost damage (12 households) and drought conditions (4 households).

Table 6: Climate Threats

CLIMATE THREAT	HOUSEHOLDS AFFECTED	PERCENTAGE	MOST VULNERABLE CROPS
EXCESSIVE RAINFALL	70	89%	Wheat, Paddy, Lentil
FROST DAMAGE	12	15%	Tomato, Potato
DROUGHT	4	5%	Rice (sowing stage)
HAILSTORMS	3	4%	Wheat, Mustard

Three primary climate threats dominate farmer concerns. Excessive rainfall during critical growth stages accounts for 68% of reported issues, particularly affecting grain crops at flowering and maturity phases, with lodging (28 reports), rotting (19 reports), and premature germination (14 reports) as frequent consequences. Frost damage, while less common (15% of cases), disproportionately impacts high-value crops like tomato and potato, often during winter months. Drought conditions, though minimally reported, reveal emerging vulnerabilities in rainfed systems, particularly for rice establishment and vegetative growth stages.

Table 7: Crop-Specific Vulnerabilities

CROP	TOP THREAT	ADAPTATION	HOUSEHOLDS	GAPS IDENTIFIED
WHEAT	Lodging from rain	Drainage + Staking	28	Limited hail protection
LENTIL	Flower drop	Drainage	14	No frost solutions
TOMATO	Frost damage	Ash + Mulching	9	High cost of covers
PADDY	Premature germination	Post-harvest drying	12	Drought during sowing

Farmer responses cluster into four strategic categories. Water management techniques form the most prevalent adaptation, with 54 households (68%) implementing drainage systems to combat waterlogging, often combined with surface drying methods. Protective physical measures appear in 22 cases (28%), including plastic tunnels for dew protection, crop covers for hail defense, and storage elevation to prevent post-harvest losses. Traditional biocontrol methods feature prominently, with 17 households (22%) using ash applications - often combined with cow urine - for frost protection and pest deterrence. Temporal adaptations, though less documented, include adjusted planting schedules (6 households) and harvest timing (9 households) to avoid predicted weather extremes.

The data reveals significant crop-specific adaptation patterns. Cereal systems (wheat, paddy) predominantly rely on drainage (42 implementations) and post-harvest covering (18 cases), while horticultural crops (tomato, cucumber) more frequently employ physical protections like tunnels and mulching (11 households). Pulse crops (lentil, chickpea) show particular vulnerability to flower drop from rainfall, with staking emerging as a specialized response in 3 households. Traditional knowledge is most evident in frost mitigation, where 9 households combine ash application with early morning timing to maximize efficacy.

Two concerning gaps emerge from the analysis. Approximately 11% of households (9 cases) report having no adaptive measures despite climate impacts, particularly for unseasonal rainfall events. Another 7 households (9%) document crop-specific knowledge gaps, notably for lentil and musuro during flowering stages. These vulnerabilities are compounded by limited institutional support, with all adaptations being farmer-developed and implemented.

The adaptation strategies demonstrate sophisticated ecological understanding. The widespread use of ash - applied by 15 households for multiple purposes (frost protection, pest control, moisture absorption) - reflects deep knowledge of mineral-plant interactions. Similarly, the precise timing of harvests to preempt rainfall events (9 households) indicates careful observation of weather patterns and crop phenology. Plasticulture adoption (5 households), while limited, shows willingness to integrate modern materials when economically feasible.

This analysis underscores the need for targeted support in three areas: strengthening traditional drainage systems with modern water control technologies, developing crop-specific protection protocols for vulnerable growth stages, and documenting effective biocontrol recipes (e.g., ash-cow urine ratios) for wider dissemination. The near absence of institutional prevention measures (e.g., weather forecasting tools, resistant varieties) suggests critical gaps in agricultural extension services that could build upon existing farmer innovation.

8. Discussion

The findings of this baseline survey provide critical insights into the agricultural dynamics and challenges faced by farming communities in Kohalpur Municipality. The dominance of cereal crops in local diets aligns with the Terai region’s reputation as Nepal’s "granary," yet the low production of legumes and vegetables raises concerns about nutritional diversity. The reliance on cereals for 9–12 months of sufficiency contrasts sharply with legumes, which are insufficient for even half the year in most households. This disparity underscores the need for interventions that promote diversified cropping systems to enhance dietary quality and resilience.

The survey highlights a concerning trend of declining indigenous crop varieties, driven by the widespread adoption of high-yielding exotic cultivars. The loss of traditional landraces, such as Tilaki rice and Jhuse barley, not only erodes genetic diversity but also diminishes cultural heritage tied to these crops. Farmers’ continued preference for indigenous crops like amaranth and buckwheat, despite production challenges, reflects their

cultural and nutritional value. However, market barriers and labor constraints hinder their cultivation, suggesting a need for value chain development and labor-saving technologies.

Seed sourcing patterns reveal a robust informal network but a glaring absence of institutional support. The near-total dependence on local exchanges and agrovets indicates a gap in formal seed systems, which could be bridged through community seed banks and partnerships with research institutions. Traditional storage practices, while effective, require modernization to address pest and moisture issues, potentially through the introduction of airtight containers complemented by botanical additives.

Gender disparities in agricultural decision-making persist, with men predominantly leading choices despite women's significant involvement in farming. Encouraging joint decision-making and targeted empowerment programs could enhance gender equity and improve agricultural outcomes. The survey also identifies migration as a transformative force, with many households being first- or second-generation settlers. This demographic shift necessitates inclusive policies that address the needs of both long-standing and newer residents.

The project's proposed strategies—ranging from conservation banks to participatory breeding—are well-aligned with these findings. By integrating traditional knowledge with scientific innovations, the initiative can revitalize agrobiodiversity while addressing climate challenges. The emphasis on policy actions, such as incentives for native germplasm conservation and IPR protections, provides a framework for sustainable implementation. Ultimately, the success of these efforts hinges on community engagement, ensuring that interventions are culturally appropriate and economically viable for farmers in Kohalpur and beyond.

In conclusion, this baseline survey not only diagnoses systemic challenges but also charts a pathway for transformative change. By prioritizing agrobiodiversity, equity, and resilience, the project can serve as a model for sustainable agriculture in Nepal, balancing productivity with cultural and ecological preservation.

9. Candidate Species for Project Inclusion

Based on the results of baseline survey (Household survey, FGD and KII) and wider consultation with stakeholders following crop species are added in the project.

S.N.	ADDED SPECIES	JUSTIFICATION
1	Tharu aalu (Potato)	There is only one plant of this variety present on the project site. Due to its unique taste, Tharu farmers in the Nepalgunj–Banke region cultivate potatoes as an important food and cash crop. The crop fits well into their local agro-climatic conditions, providing both household nutrition and income, while also playing a role in traditional diets and farming practices.
2	Winter bean	This plant is traditionally used by the community as a natural remedy for blood pressure. It is found only in specific areas, particularly the lower belt of the project site, and is seasonally consumed by the local population.

S.N.	ADDED SPECIES	JUSTIFICATION
3	Wild rice	Wild rice in the Nepalgunj–Banke region holds significant importance due to its unique genetic diversity, which can contribute valuable traits such as stress tolerance, pest resistance, and adaptability to climate change. Its conservation and utilization are essential for crop improvement, food security, and sustaining local biodiversity.
4.	Ridge gourd (Goima)	Ridge gourd cultivation is important due to its high nutritional value and economic benefits. It is a fast-growing vegetable rich in vitamins and minerals, widely used in local diets. Cultivating ridge gourd provides farmers with a good source of income, as it has strong market demand. Additionally, ridge gourd plants help improve soil health through their spreading vines, making them beneficial for sustainable farming practices. season. Therefore, it is important to include awareness and promotion programs to support their sustainable use

10. Ways forward: Guidelines for implementing project activities

To ensure the sustained availability and competitiveness of native technologies and germplasm at both local and global levels, it is essential to develop targeted strategies and action plans. Enhancing genetic diversity is crucial for building resilient agricultural systems that are climate-adaptive and sustainable. Agricultural challenges should be addressed through locally available biodiversity-based solutions, leveraging their proven adaptability and effectiveness. Additionally, strengthening localized seed systems while expanding global product markets can create a balanced approach that enhances community resilience and integrates local strengths into the global economy.

Supporting native and circular agriculture rooted in agroecology plays a vital role in fostering a healthy environment, ensuring food and nutrition security, and improving overall well-being. Documenting and preserving the cultural heritage, along with Indigenous agricultural knowledge and practices of Nepalese farming communities, is essential. Understanding climate change impacts, developing adaptation strategies, and promoting high-nutrient, climate-resilient agricultural genetic resources (AGRs) through local markets will help conserve native agrobiodiversity and cultural integrity. This approach strengthens community resilience to climate change, improves livelihoods, and deepens the connection between people and their land.

11. Conservation

1. **Establish Conservation Banks**: Develop and promote diverse conservation banks, such as agro-gene sanctuary, seed gene banks, field genebanks, forage field genebanks, school field genebanks, community genebanks, agro-insect field genebanks, crop-specific parks, agro-microbial field genebanks, livestock farm genebanks, and household genebanks.
2. **Raithane Nurseries and Agro-Plantation**: Establish Raithane (native) nurseries and organize agro-plantation initiatives to restore and conserve native species and strengthen agro-ecosystems not only

in private areas but also in public area, fallow land in partnership with public institutes and farmers' groups.

3. **Document Agricultural Biodiversity**: Compile detailed profiles of all agricultural genetic resources at species, landrace, and genotype levels across households, villages, wards, and districts, alongside food biodiversity and climate change impact.
4. **Seed Fairs and Exchange Systems**: Regularly organize seed fairs and promote community-based seed exchange systems to enhance seed security, agrobiodiversity, and community resilience.
5. **Publish Landrace Catalogs**: Develop and distribute comprehensive catalogs and profiles of landraces covering all six components of agrobiodiversity, including their nutritional and health value profiles, to raise awareness and support conservation efforts.
6. **Create a Digital Genebank**: Establish a digital genebank or digital map of landraces to document, manage, and facilitate access to valuable genetic resources.
7. **Agro-Friendly Fields**: Promote agricultural practices that create agro-insect, agro-microbe, and agro-bird-friendly fields, fostering biodiversity within agricultural landscapes.
8. **Nature-Positive Practices**: Advocate for nature-positive agricultural practices, including the adoption of nature-positive storage systems, to align conservation with sustainable practices.
9. **Conserve Threatened Species, NUS and landraces**: Designate agrobiodiversity hotspots or conservation areas for threatened species and landraces and protect habitats of wild relatives along with ex-situ conservation.
10. **Promote Inclusive Agriculture**: Foster an inclusive agricultural approach that integrates crops, forages, livestock, agro-insects, agro-microbes and aquatic genetic resources with food, nutrition, health, business, and environmental objectives to address the diverse needs of communities as well as generating income while ensuring ecological sustainability.
11. **Understand the value of CWR and Wild edible species**: Document, promote and domesticate CWR and wild edible species available around the project sites. Need to conserve them as agro-gene sanctuary in public areas.

12. Utilization

1. **Participatory Landrace Enhancement**: Implement participatory landrace enhancement and conservation (LEC) programs to improve and utilize native genetic resources effectively.
2. **Evaluate Landraces on Ecological Yields**: Assess the performance of landraces based on their ecological yield rather than focusing solely on single traits. Incorporate the food health index of agricultural products to highlight their nutritional and health benefits.
3. **Promote Genetic Diversity**: Introduce evolutionary plant breeding, cultivar mixtures, and practices to enhance genetic diversity in fields, kitchens, and food systems to support resilience, nutrition and health.
4. **Domesticate Valuable Species**: Identify and domesticate high-value species with potential for agricultural, nutritional, and economic benefits.

5. **Climate-Resilient Crops**: Identify and promote climate-resilient crops, prioritizing ecological yield and Food Health Index parameters for sustainable production systems.
6. **Establish Diversity Blocks**: Create diversity blocks to support selection, natural adaptation, and the evolution of new genotypes suited to changing conditions as well as to improve the understanding of farming communities on genetic diversity through diversity field school.
7. **Reintroduce Lost Landraces**: Reintroduce lost landraces and repatriate them from national and global gene pools to restore local agrobiodiversity.
8. **Study Climate Change Impacts**: Conduct studies on the impact of climate change on native agrobiodiversity and monitor the evolution of new genotypes under shifting environmental conditions.
9. **Register Landraces**: Register native landraces as private goods to incentivize their conservation and utilization while ensuring community rights and benefits.
10. **Promote Ecological Pest Management**: Develop and implement ecological pest management strategies to address insect pest challenges in an environmentally sustainable manner.
11. **Value Addition and Market Linkages**: Enhance the value of agrobiodiversity through breeding and non-breeding approaches, and establish strong market linkages for these improved products.
12. **Product Diversification**: Diversify agricultural products to cater to various markets and enhance resilience to market fluctuations.
13. **Improve Local Tools and Mechanization**: Upgrade traditional tools and mechanization systems to make local agricultural practices more efficient and productive.
14. **Market guarantee of each product and promoting farmer's household as shop:** To ensure the sustainability and profitability of native agrobiodiversity, there must be a reliable market for each product. Empowering farmers as direct sellers can enhance profitability and reduce dependency on middlemen.
15. **Develop production practice from fallow land:** Utilizing fallow land for sustainable production of native crops can help improve soil health and biodiversity. Some practices are natural farming, root and tuber field genebank, agro gene sanctuary etc.

13. Cultural integrity

1. **Preserve Indigenous Knowledge and Practices:** Document, safeguard, and promote traditional agricultural practices that reflect the cultural and economic values.
2. **Training and Skill Development:** Conduct training programs and action research focused on adding value to native and local genetic diversity, enhancing community skills in utilizing and promoting these resources.
3. **Awareness on Value Addition:** Raise awareness about the importance of adding value to and promoting traditional and native genetic resources to strengthen their role in sustainable agriculture.

4. **Organize Community Events:** Regularly hold diversity field schools, food fairs, diversity fairs, seed exchange programs, exchange visits, traveling seminars, and workshops to engage communities and share knowledge.
5. **Document and Share Indigenous Practices:** Systematically document Indigenous agricultural practices and traditional knowledge, and ensure this information is widely shared to encourage adoption and preservation.
6. **Develop Accessible Materials:** Publish and distribute farmer-friendly materials in local languages and formats to make information on agrobiodiversity accessible and practical for end-users.
7. **Incorporate Agrobiodiversity into Education:** Integrate agrobiodiversity science into school curricula to build early awareness and foster a new generation of advocates for sustainable agricultural practices.
8. Provide resources and support for agricultural festivals, rituals, and ceremonies that celebrate planting, harvesting, and other agrarian activities.
9. **Promote Culturally Significant Crops and other AGRs:** Identify and prioritize the conservation and promotion of crops and other AGRs with deep cultural connections to the local communities.
10. **Community-based Tourism:** Foster cultural tourism, such as agro-tourism and home-stays, to highlight the unique agricultural heritage and cultural values of the sites.
11. **Educate on Cultural Agrobiodiversity:** Develop community-based education programs to raise awareness about the importance of cultural integrity in agricultural practices, particularly for younger **generations.**
12. **Support IPR for Traditional Practices:** Protect traditional agricultural practices, knowledge, and products under intellectual property rights (IPR), ensuring their continued relevance and contribution to the community's cultural identity.
13. **Create Cultural Heritage Zones:** Designate certain agricultural landscapes or practices as cultural heritage zones to preserve and celebrate the unique agricultural legacy.

14. Awareness and capacity

1. **Training and Skill Development:** Conduct training programs and action research focused on adding value to native and local genetic diversity, enhancing community skills in utilizing and promoting these resources.
2. **Awareness on Value Addition:** Raise awareness about the importance of adding value to and promoting traditional and native genetic resources to strengthen their role in sustainable agriculture.
3. **Organize Community Events:** Regularly hold diversity field schools, food fairs, diversity fairs, seed exchange programs, exchange visits, traveling seminars, and workshops to engage communities and share knowledge.

4. **Document and Share Indigenous Practices:** Systematically document Indigenous agricultural practices and traditional knowledge, and ensure this information is widely shared to encourage adoption and preservation.
5. **Develop Accessible Materials:** Publish and distribute farmer-friendly materials in local languages and formats to make information on agrobiodiversity accessible and practical for end-users.
6. **Incorporate Agrobiodiversity into Education:** Integrate agrobiodiversity science into school curricula to build early awareness and foster a new generation of advocates for sustainable agricultural practices.

15. Policy actions

1. **Provide Incentives for Conservation and utilization**: Implement incentive mechanisms to support the conservation and utilization of native germplasm, ensuring they are aligned with broader strategies to promote sustainable agricultural practices.
2. **Integrate Native Genetic Resources into Formal Systems**: Ensure native genetic resources are automatically included in formal agricultural systems, with applicable incentive mechanisms to encourage their use and preservation.
3. **Increase Genetic Diversity**: Recognize the importance of genetic diversity in agricultural policies. Develop strategies to enhance genetic diversity at all levels, from local to national scales, as a cornerstone of resilient and sustainable agriculture.
4. **Protect Traditional Knowledge and Products**: Safeguard traditional practices, native products, and technologies under intellectual property rights (IPR), including geographical indications, to preserve cultural heritage and add value to local products.
5. **Support Local Packaging and Branding**: Allow and promote the packaging and branding of local products at the community level to improve marketability and economic benefits for producers.
6. **Promote Market Access for Agricultural Items**: Facilitate the marketing of all agricultural items through initiatives such as agro-tourism, home-stays, hat-bazar and the establishment of community and household genebanks, which also serve to strengthen community resilience and biodiversity conservation.
7. Strengthen germplasm sharing, and access and benefit sharing mechanism for agrobiodiversity: Need to develop germplasm sharing mechanism along with ABS separately for agrobiodiversity.

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Annexes

Annex I: Below are some crop varieties suitable for the Terai region, specifically for project site

SN	Crop	Variety	Recom year	Days to maturity	Yield, t/ha
1.	Amaranth	Ramechhap Hariyo Latte	2018	130-145	8.68
2.	Finger millet	Okhale-1	1980	125-194	3.3
3.		Dalle-1	1980	125-151	3.3
4.		Kabre Kodo-2	2015	153	2.5
5.		Kabre Kodo-1	1990	167	2.3
6.	Proso millet	x			
7.	Sorghum	x			
8.	Little millet	x			
9.	Foxtail millet	x			
10.	Pearl millet	x			
11.	Buckwheat	Mithe Phapar-1	2015	72	1.2
12.		Tite Phapar-1	2021	79	1.54
13.		Tite Phapar-2	2021	78	1.63
14.	Barley	Bonus	1974	162	3.6
15.	Naked barley	x			
16.	Black gram	Rampur Mas	2018	64	0.88
17.		Khajura Mas-1	2018	66	0.89
18.	Lentil	Sindur	1979	143	1.5
19.		Simrik	1979	128	1.5
20.		Sisir	1979	150	2.0
21.		Simal	1990	143	4.1
22.		Shikhar	1990	143	3.5
23.		Shital	2004	134	1.1
24.		Sagun	2007	98	1.3
25.		Maheshor Bharati	2007	111	1.4
26.		Khajura Musuro-3	2017	148	1.78
27.		Khajura Musuro-4	2018	136	1.08
28.		Shradha Kalo Musuro	2020)	142	1.21
29.	Horse gram	x			
30.	Faba bean	x			

Annex II: List of participants of Household survey

SN	Respondent	Address
1	Chandraa Kumari Singh	Banke, Kohalpur- 2, Muktinagar
2	Narada Poudel	Banke, Kohalpur- 2, Muktinagar
3	Narayani Timilsina	Banke, Kohalpur- 2, Muktinagar
4	Haai Devi Malla	Banke, Kohalpur- 2, Muktinagar
5	Tara Gharti	Banke, Kohalpur- 2, Muktinagar
6	Tika Devi Chapagain	Banke, Kohalpur- 2, Muktinagar
7	Punya Prabha Malla	Banke, Kohalpur- 2, Muktinagar
8	Sangeeta Malla	Banke, Kohalpur- 2, Muktinagar
9	Krishnaa Shahi	Banke, Kohalpur- 2, Muktinagar
10	Badali Khatri	Banke, Kohalpur- 2, Muktinagar
11	Rekha KC	Banke, Kohalpur- 2, Muktinagar
12	Kalauti Tharu	Banke, Kohalpur- 2, Muktinagar
13	Heera Tharu	Banke, Kohalpur- 2, Muktinagar
14	Kalmaiya Tharu	Banke, Kohalpur- 2, Muktinagar
15	Madan Kumari Shahi	Banke, Kohalpur- 2, Muktinagar
16	Tika Basnet	Banke, Kohalpur- 2, Anandanagar
17	Chandra Kala Rijal	Banke, Kohalpur- 2, Bikashnagar
18	Sarada Chaudhary	Banke, Kohalpur- 2, Bikashnagar
19	Pavitra Dhada Magar	Banke, Kohalpur- 2, Bikashnagar
20	Rupa Kumari Sharma	Banke, Kohalpur- 2, Bikashnagar
21	Juna Kumari Darlami	Banke, Kohalpur- 2, Bikashnagar
22	Thigi Tharu	Banke, Kohalpur- 2, Muktinagar
23	Kanxi Tharu	Banke, Kohalpur- 2, Muktinagar
24	Kalmati Tharu	Banke, Kohalpur- 2, Muktinagar
25	Sanjita Tharu	Banke, Kohalpur- 2, Muktinagar
26	Bittu Tharuni	Banke, Kohalpur- 2, Muktinagar
27	Chandra Mahatara	Banke, Kohalpur- 2, Muktinagar
28	Man B. Shahi	Banke, Kohalpur- 2, Bikasnagar
29	Ganesh B. Shahi	Banke, Kohalpur- 2, Bikasnagar
30	Jaya B. Nepali	Banke, Kohalpur- 2, Bikasnagar
31	Tilsari Pathak	Banke, Kohalpur- 2, Bikasnagar
32	Pabitra Khadka	Banke, Kohalpur- 2, Bikasnagar
33	Dil Maya Sijali	Banke, Kohalpur- 2, Bikasnagar

SN	Respondent	Address
34	Bhagawati Rijal	Banke, Kohalpur- 2, Bikasnagar
35	Panchakali Khatri	Banke, Kohalpur- 2, Bikashnagar
36	Hari Magarni	Banke, Kohalpur- 2, Bikashnagar
37	Kamala Budha	Banke, Kohalpur- 2, Bikashnagar
38	Geeta Bika	Banke, Kohalpur- 2, Bikashnagar
39	Kushuma Pun Magar	Banke, Kohalpur- 2, Bikashnagar
40	Kekhar Kumari Ale	Banke, Kohalpur- 2, Bikasnagar
41	Uma Laxmi Pandey	Banke, Kohalpur- 2, Bikashnagar
42	Surbir Karki	Banke, Kohalpur- 2, Muktinagar
43	Yasodha Khatri	Banke, Kohalpur- 2, Muktinagar
44	Gyanu Chand	Banke, Kohalpur- 2, Muktinagar
45	Jayaprati Karki	Banke, Kohalpur- 2, Shaktinagar
46	Bhadra Kala Karki	Banke, Kohalpur- 2, Bikasnagar
47	Nan Kali Karki	Banke, Kohalpur- 2, Shaktinagar
48	Sangeeta Tharu	Banke, Kohalpur- 2, Muktinagar
49	Maina Raut	Banke, Kohalpur- 2, Shantnagar
50	Haijali Chaulagain	Banke, Kohalpur- 2, Shantnagar
51	Bhagirati Shahi	Banke, Kohalpur- 2, Shantnagar
52	Purnima Shahi	Banke, Kohalpur- 2, Shantnagar
53	Sangeeta Budathoki	Banke, Kohalpur- 2, Shantnagar
54	Siukali Budathoki	Banke, Kohalpur- 2, Shantnagar
55	Utti Kala Nepal	Banke, Kohalpur- 2, Shantnagar
56	Urmila Pun Magar	Banke, Kohalpur- 2, Saktinagar
57	Dalli Rokaya	Banke, Kohalpur- 2, Shaktinagar
58	Prativa Chaudary	Banke, Kohalpur- 2, Shaktinagar
59	Sushila Hamal	Banke, Kohalpur- 2, Shaktinagar
60	Jay Laxmi Acharya	Banke, Kohalpur- 2, Shaktinagar
61	Kamala K.C.	Banke, Kohalpur- 2, Krishnanagar
62	Mina Magarati	Banke, Kohalpur- 2, Krishnanagar
63	Rajpura Rokaya	Banke, Kohalpur- 2, Krishnanagar
64	Bhabisara Tharu	Banke, Kohalpur- 2, Muktinagar
65	Chinki Chaudary	Banke, Kohalpur- 2, Muktinagar
66	Mohani Tharu	Banke, Kohalpur- 2, Muktinagar
67	Patni Chaudari	Banke, Kohalpur- 2, Muktinagar
68	Agniya Chaudari	Banke, Kohalpur- 2, Muktinagar

SN	Respondent	Address
69	Jak Mani Tharu	Banke, Kohalpur- 2, Muktinagar
70	Janaki Tharu	Banke, Kohalpur- 2, Muktinagar
71	Sukani Chaudari	Banke, Kohalpur- 2, Muktinagar
72	Monica Tharu	Banke, Kohalpur- 2, Muktinagar
73	Sun Nani Tharu	Banke, Kohalpur- 2, Muktinagar
74	Koili Tharu	Banke, Kohalpur- 2, MUktinagar
75	Jamuna Tharu	Banke, Kohalpur- 2, Muktinagar
76	Hariram Chaudary	Banke, Kohalpur- 2, Muktinagar

Annex III: List of participants of FGD

S.N.	List of participants	Address	Phone number
1.	Chandra Bahadur Gharti	Kohalpur-2, Muktinagar	9848055221
2.	Chandralal Chaudary	Kohalpur-2, Muktinagar	9868009634
3	Ramlal Chaudary	Kohalpur-2, Muktinagar	9844398754
4.	Rajaram Chaudary	Kohalpur-2, Muktinagar	
5.	Lachhane Chaudary	Kohalpur-2, Muktinagar	
6.	Kamala Chaudary	Kohalpur-2, Muktinagar	
7.	Methu Chaudary	Kohalpur-2, Muktinagar	
8.	Ankali Chaudary	Kohalpur-2, Muktinagar	
9.	Suguri Chaudary	Kohalpur-2, Muktinagar	
10.	Basdaiya Chaudary	Kohalpur-2, Muktinagar	
11.	Yamuna Chaudary	Kohalpur-2, Muktinagar	9768232425
12.	Salu Chaudary	Kohalpur-2, Muktinagar	9703824146
13.	Prabina Tharu	Kohalpur-2, Muktinagar	
14.	Nirmala Tharu	Kohalpur-2, Muktinagar	9709824495
15.	Kuchu Tharu	Kohalpur-2, Muktinagar	
16.	Santoshi Tharu	Kohalpur-2, Muktinagar	
17.	Bishni Chaudary	Kohalpur-2, Muktinagar	9814837437
18.	Amrita Chaudary	Kohalpur-2, Muktinagar	9814580201
19.	Jasu kumari Chaudary	Kohalpur-2, Muktinagar	9865594409
20.	Lalita Tharu	Kohalpur-2, Muktinagar	980454892
21.	Fattu Chaudary	Kohalpur-2, Muktinagar	
22.	Masaram Chaudary	Kohalpur-2, Muktinagar	9810820874
23.	Kisnu Tharu	Kohalpur-2, Muktinagar	9702494968
24.	Rohit Darji	Kohalpur-2, Muktinagar	9816588240
25.	Amit Chaudary	Kohalpur-2, Muktinagar	9764266074
26.	Kaili Chaudari	Kohalpur-2, Muktinagar	

S.N.	List of participants	Address	Phone number
27.	Bittu Chaudari	Kohalpur-2, Muktinagar	
28.	Hari ram Chaudary	Kohalpur-2, Muktinagar	9812590923
29.	Sita Chaudary	Kohalpur-2, Muktinagar	9800552617
30.	Sunita Chaudary	Kohalpur-2, Muktinagar	9749524566
31.	Jamuna Gurung Tharu	Kohalpur-2, Muktinagar	9868105811
32.	Sarala Basnet	Kohalpur-2, Muktinagar	9765387065
33.	Ram lal Chaudary	Kohalpur-2, Muktinagar	9868600666
34	Purmal Basnet	Kohalpur-11, Banke	9848351025
35	Chandra Bahadur G.C.	Kohalpur-2	9848055221
36	Karna Bahadur Budha Chhetri	Kohalpur-2	9848036982
37	Chandralal Chaudary	Kohalpur-2	9866009634
38	Mohan Rijal	Kohalpur-2	9848030431
39	Purna Bahadur Darlami	Kohalpur-2	9842715111
40	Shyam lal Khanal	Kohalpur-2	98481304266
41	Lok Prasad Neupane	Kohalpur-2	9868251289
42	Tanu Bahadur Khatri	Kohalpur-2	9868144852
43	Karna Singh B.C.	Kohalpur-2	9848028692
44	Nekh Bahadur Khatri	Kohalpur-2	9848235778
45	Tilak Prasad Sharma	Kohalpur-2	9868020574
46	Bal Bahadur G.C	Kohalpur-2	9868039028
47	Harka Bahadur Shahi	Kohalpur-2	9845597711
48	Chandra Singh	Kohalpur-2	9840909988
49	Narda Paudel	Kohalpur-2	9848257517
50	Suresh Kumar Chaudary	Kohalpur-2	9858021770
51	Haidevi Malla	Kohalpur-2	9847181701
52	Gauri Bali	Kohalpur-2	9804594430

Annex IV: Household survey questionnaire

घरधुरी नम्बर:

मिति:

१. सामान्य जानकारी

1. जिल्ला
2. गाविस
3. गाउँ वा टोलको नाम
4. वडा नं
5. उत्तरदाताको नाम
6. लिङ्ग महिला ☐ पुरुष ☐
7. उमेर वर्ष
8. थर /जात
9. फोन नम्बर
10. कृषि सम्बन्धी कार्यको लागि निर्णय कसले कसले गर्नुहुन्छ
    महिला ☐ पुरुष ☐ दुवै ☐
11. तपाईंको परिवारमा कति जना सदस्य कृषि सम्बन्धी कार्यमा संलग्न हुनुहुन्छ। ☐
12. यो ठाउँमा बसोबास गर्न थाल्नुभएको कति वर्ष भयो ☐
13. तपाईंको परिवारमा कुनै सदस्य गाविस बाहिर काम गर्नुहुन्छ
    छ ☐ छैन ☐
14. तपाईंको परिवारको आम्दानीको मुख्य स्रोत के के हुन्

कृषि तथा पशुपालन ☐ व्यवसाय ☐ जागिर वा नोकरी ☐

कृषि श्रमिक ☐ गैर कृषि श्रमिक ☐ रेमिटेन्स ☐

जडीबुटी संकलन ☐ अन्य ☐

२. कृषि सम्बन्धी विवरण

15. आफ्नो कृषि उत्पादनले तपाईंको परिवारलाई कति वर्ष खान पुग्छ कति महिना

खाद्य प्रकार	**महिना**
मुख्य बाली अन्नबाली	
हरियो सागपात	
तरकारी बाली	
दलहन बाली	
जंगली बाली	
अन्य	

16. तपाईंले आफ्नो खेतबारीमा तल उल्लेखित कुन कुन बालीहरू लगाउनुहुन्छ?

बालीको नाम	**जात**	**बिउको स्रोत**	**क्षेत्रफल**		**जम्मा उत्पादन**	**उत्पादन बेच्नुहुन्छ**
			परिमाण	**एकाइ**		
लट्टे						
फापर						
कोदो						
मुसुरो						
उवा						
बकुला						

17. तपाईंले फापर लट्टे कोदो मुसुरो उवा र बकुलाका हराइसकेका पैथाने जातहरू मा कुनै लगाउन चाहनुहुन्छ

बालीको नाम	**जात**	**बिउको स्रोत**	**क्षेत्रफल**		**प्रयोग**	**खेती बढ्दो वा घट्दो छ**
			परिमाण	**एकाइ**		
लट्टे						
फापर						
कोदो						
मुसुरो						
उवा						
बकुला						

18. यी बालीहरूको जंगली प्रजातिहरू तपाईंको वरिपरि पाइन्छ

बालीको नाम	**जातको नाम**	**प्रयोग**	**स्थान**
धान			
लट्टे			
फापर			
कोदो			
मुसुरो			
उवा			
बकुला			

19. तपाईंले फापरको साग खानुहुन्छ

खान्छु ☐ खाँदिन ☐

20. लट्टेको साग खानुहुन्छ

खान्छु ☐ खाँदिन ☐

21. तपाईंले जङ्गली वा जङ्गलबाट के के खाद्य वस्तुहरू सङ्कलन गरी खानुहुन्छ

बालीको नाम	जातको नाम	प्रयोग	पाहिने स्थान

22. माथि उल्लेखित बालीहरुको खेती प्रविधि सम्बन्धी कुनै तालिम पाउनुभएको छ

छ ☐ छैन ☐

23. यी बाहेक यस स्थानमा हराउन लागेका एकदम महत्वपूर्ण तीन बालीहरु र तिनका जातहरु के के हुन्

बालीको नाम	जातको नाम	प्रयोग	हाल पाहिने स्थान

24. स्थानमा हराइसकेका रैथाने बालीहरु र तिनीहरुका जातहरु के के हुन्

बालीको नाम	जातको नाम	प्रयोग

25. तपाईंले कुनै रैथाने फलफुल बगैंचा, रैथानिक किरा पालेको छ

छ ☐ छैन ☐

26. तपाईंले स्थानीय बाली त रैथानी वा परम्परागत परिकारहरु बनाउनुहुन्छ

परिकार	**समय/ चाडपर्व**	**महत्व**

27. जिन बैंकको बारेमा जानकारी छ

छ ☐ छैन ☐

28. तपाईंको विचारमा यस ठाउँमा एकदम राम्रो रैथाने जातका कुन कुन बालीको के के जात छ

बालीको नाम	**जातको नाम**	**गुण**

३. परम्परागत ज्ञान को विवरण को विवरण

29. तपाईंले अरु रैथाने जातको बिउ कहाँबाट प्राप्त गर्नुहुन्छ ? मुख्य तीन स्रोत

सि.न	**श्रोत**
1	
2	
3	

30. रैथाने बिउ उत्पादन कसरी गर्नुहुन्छ बिउको लागि बिरुवाको छनोट कसरी गर्नुहुन्छ

31. घरमा बिउ कसरी भण्डारण गर्नुहुन्छ मुख्य तीन तरिका

सि.न	**तरीका**
1	
2	
3	

32. तपाईंले कृषि सम्बन्धित के के रैथाने तथा स्थानीय जातहरु को संरक्षण जातहरुको संरक्षण गर्नुभएको छ

वस्तु	**नाम**	**गुण**

33. अनिश्चित मौसमको कारण कृषि बालीमा कस्तो प्रभाव परेको छ? मुख्य तीन प्रभावहरु भन्नुहोला

सि.न	**प्रभाव**
1	
2	
3	

34. अनिश्चित मौसमको कारण परेको कृषि बालीमा परेको प्रभाव न्यूनीकरणको लागि के के उपाय गर्नुभएको छ

सि.न	**प्रभाव**	**उपाय**
1		
2		
3		

Annex V: Check list for FGD

स्थान:
मिति:
सहभागी संख्या:

A. crop calendar

1. यस स्थानमा लगाउने बाली चक्र बनाउने
2. कोदो लट्टे मुसुरो वा बकुला म्यान्डेटरी क्रपको बाली चक्र बनाउने

B. Status of landraces cultivation and CWR identification

1. यहाँहरुले लगाउने बालीहरुमा रैथाने बालीहरुले कति जति प्रतिशत ठाउं ओगटेको छ?

2. यस स्थानमा हराउन लागेको बालीहरु रैथाने के के हुन्? (बाली र जात listing)

बालीको नाम	जातको नाम	प्रयोग	स्थान

3. यस स्थानमा हराइसकेका महत्त्वपूर्ण बालीहरु के के हुन्? (बाली र जात listing)

बालीको नाम	जातको नाम	प्रयोग	स्थान

4. यी बालीहरुको जंगली प्रजातिहरु तपाईंको वरिपरि पाइन्छ

बालीको नाम	जातको नाम	प्रयोग	स्थान
धान			
लट्टे			

फापर			
कोदो			
मुसुरो			
उवा			
बकुला			

5. रैथाने जात संरक्षणमा के कस्तो कामहरु भइरहेको छ (listing)

कामको विवरण	कसले गरेको	कहिले देखि गरेको

5. Traditional knowledge documentation and custodian farmer identification

1. यहाँ परम्परागत खानाहरु खाने चलन कतिको छ र के के छ
2. यस ठाउँमा कुनै सामुदायिक ब्यु बैंक सामुदायिक रैथाने बगैंचा बिउ सामुदायिक किरा पालेको रैथाने किरा पालेको कोही हुनुहुन्छ (listing)

विवरण	**कृषकको नाम**	**स्थान**	**प्रयोग**
किरा			
माछा			

3. यस ठाउँमा सबैभन्दा धेरै रैथाने जात लगाउनुहुने र परम्परागत ज्ञान भएको मानिसहरु वा व्यक्ति तपाईहरुले कोही चिन्नुभएको छ

कृषकको नाम	महिला/ पुरुष	कहिले देखि गरेको

4. अनिश्चित मौसमको कारण यस ठाउँमा कृषिमा बालीमा कस्तो प्रभाव परेको छ र यसलाई न्यूनीकरण कसरी गरिरहनु भएको छ

प्रभावको विवरण	**कृषकको नाम**	**कृषकको तरिका वा बिधि**	**स्थान**

6. Need identification and Sensitization

1. रैथाने जात संरक्षण किन आवश्यक छ
2. के के जात पाईदिए लगाऊछु (Listing)?
3. तपाईँहरुले यहाँ फापर लट्टे कोदो मुसुरो वा बकुला लगाउन चाहनुहुन्छ वा हुँदैन के के लगाउनु चाहनुहुन्छ ?
4. जिन बैंकको बारेमा जानकारी छ र के के छ

Annex VI: Checklist for KII

1. Name (नाम):	2. Age (उमेर):	3. Gender (लिंग):
4. Ethnicity (थर/जाति:	5. Occupation (पेशा):	6. Organization and designation (संस्था र पद):
7. Education (शिक्षा):	8. Address (ठेगाना)	9. GPS coordinates (भौगोलिक अवस्थिति):
10. Contact No (सम्पर्क न:)	11. Family members (परिवार सदस्य संख्या):	

12. How many members are directly involved in agriculture related activities? तपाईको परिवारका कतिजना सदस्य प्रतक्ष्य रुपमा कृषि पेशामा संलग्न छन्?
13. How many members are migrated from your family? तपाईको घरबाट कतिजना सदस्य बसाइसराई गरि अन्यत्र जानुभएको छ?
14. Who makes agriculture-related decisions in the household? तपाईको घरमा कृषि सम्बन्धिको कार्यहरुमा कसले निर्णय लिने गर्नुहुन्छ?
15. Total land area (जग्गाको कुल क्षेत्रफल): ..... Ropani(रोपनी)
16. यस स्थानमा कस्तो खालको बाली चक्र अपनाउने गरिन्छ ??
17. यस स्थानमा हराउन लागेको बालीहरु पैथाने के के हुन्? (बाली र जात listing)

बालीको नाम	जातको नाम	प्रयोग	स्थान

18. यस स्थानमा हराइसकेका महत्त्वपूर्ण बालीहरु के के हुन्? (बाली र जात listing)

बालीको नाम	जातको नाम	प्रयोग	स्थान

19. तपाइको क्षेत्रमा पाइने बालिका जंगली प्रजातिहरु के के हुन्?
20. तपाईको क्षेत्रमा रैथाने कृषि संरक्षणमा के कस्तो कामहरु भइरहेको छ (listing)

कामको विवरण	कसले गरेको	कहिले देखि गरेको

21. यहाँ परम्परागत खानाहरु खाने चलन कतिको छ ?? के के खाने गरिन्छ ?
22. यस ठाउँमा कुनै सामुदायिक बीउ बैंक अथवा सामुदायिक फिल्ड जिन बैंक छ?

23. यस ठाउँमा सबैभन्दा धेरै रैथाने जात लगाउनुहुने र परम्परागत ज्ञान भएको मानिसहरु वा व्यक्ति तपाईहरुले कोही चिन्नुभएको छ

कृषकको नाम	महिला/ पुरुष	कहिले देखि गरेको

24. अनिश्चित मौसमको कारण यस ठाउँमा कृषिमा बालीमा कस्तो प्रभाव परेको छ र यसलाई न्यूनीकरण कसरी गरिरहनु भएको छ ??
25. रैथाने जात संरक्षण किन आवश्यक छ
26. तपाइलाई जिन बैंकको बारेमा जानकारी छ??
27. यस ठाउमा रैथाने हाटबजार संचालनको सम्भावना के छ ??
28. यस स्थानमा रैथाने कृषिका मुख्य समस्या के के हुन् र तिनलाई समाधान गर्न तपाइको बिचारमा के गर्नुपर्ला ??

Annex VII: List of disappearing landraces in project site

SN	Name of Landraces	SN	Name of Landraces	SN	Name of Landraces
Rice					
1	Anadi	24	Janaki	47	Rambilas
2	Badula dhan	25	Jaran dhan	48	Rato anadi
3	Bagmati	26	Jarbuto	49	RR-8
4	Barma	27	Jeera Masino	50	Sabitri
5	Basmati	28	Jhyale	51	Sadha
6	Bhadaure dhan	29	Jinuwa	52	Sano jeera
7	Bhatalo dhan	30	Kala namak	53	Sano mansuli
8	Bhatte	31	Kalo jarad	54	Sarju
9	Bhursale	32	Kalo jeera	55	Sathi dhan
10	Bilkun	33	Kanchi mansuli	56	Shyam Jeera
11	Bindeshwori	34	Karange Kalo dhan	57	Shyama
12	Charanchur	35	Karangi	58	Simtado
13	Darnale	36	Mala	59	Sindhure dhan
14	Daruwa	37	Mala Dhan	60	Sinthari
15	Dhiruwa	38	Mansuli	61	Sohawat
16	dhunmuniya	39	Masri dhan	62	Sona jeera
17	Diruwa	40	Mato	63	Sona mansuli
18	Garve dhan	41	Mehi	64	Suga pankhi dhaan
19	Ghummuniya	42	Pakhe dhan	65	Taichun
20	Gopal Dhan	43	Radha 3	66	Tharuwa
21	Gutthe dhan	44	Radha 4	67	Thulo jhinuwa
22	Hardinath	45	Raktanpuri dhan	68	Thulo Mansuli
23	Hurmuniya	46	Ram Dhan	69	Tilki

SN	Name of Landraces	SN	Name of Landraces
Wheat		**Beans**	
1	Dangaure rato gahun		Siltung
2	BIlaspur Gahun		Hiude simi
3	Murella Gahun	**Barley**	
4	Lire Gahun		Local Barley
5	Kala Pade Gahun		Jhuse Jau
6	Rato Gahun	**Potato**	
7	Kathe Gahun		Tharu
8	Dotel Gahun		

SN	Name of Landraces	SN	Name of Landraces
9	Meghale Gahun	**Radish**	
Maize		1	Small Local
1	Arun 2	1	Local
2	Local Makai	**Mustard**	
3	Seto Makai	1	Rato Saag
4	Tin Pankhi	**Chickpea**	
5	Barmasi	1	Kalo chana
6	Rakre Makai	**Ash gourd**	
7	Dokla Makai	1	Local
8	Kalo Makai	**Bitter Gourd**	
9	Tyase Makai	1	Local sano karela
10	Paisey Makai	**Sponge Gourd**	
11	Pyale Baspate Makai	1	Ghirpite ghiraula
Flax seed		**Amaranth**	
1	Arsi	1	Mate Saag
Pigeon pea		**Chukile jhar**	
1	Local	1	Local

Annex IX: Project Brochure

On-farm project: An introduction

Enhancing Conservation and Utilization of Plant Genetic Resources in Nepal for Food and Nutrition Security Under Unpredictable Climate

OUTPUT 1: Adapted PGRFA managed or improved with farmers' participation.

SUB-OUTPUT 1.1. Use and conservation of farmers' varieties enhanced.

SUB-OUTPUT 1.2. New adapted varieties developed through participatory research.

SUB-OUTPUT 1.3. Dynamic linkages strengthened between on-farm program and genebanks and others in the agricultural research systems.

OUTPUT 2: Enhanced local value chains improve the production and consumption of adapted PGRFA

SUB-OUTPUT 2.1. Local seed value chains improved for dissemination of adapted varieties.

SUB-OUTPUT 2.2. Use of adapted PGRFA and their products enhanced in the local food value chain.

OUTPUT 3: Mechanisms strengthened to enhance the sharing of PGRFA materials, data and knowledge.

SUB-OUTPUT 3.1. Linkages strengthened to ensure the dynamic flow of PGRFA materials and data from local to global through the ITPLS and GLIS.

SUB-OUTPUT 3.2. Capacities of BSF partners enhanced to document and disseminate knowledge on innovations for PGRFA management.

SUB-OUTPUT 3.3. Knowledge gained and lessons learned accessed and used by all regions through the community of practice.

SUB-OUTPUT 3.4. Visibility on innovations for PGRFA management increased for evidence-based policy and planning.

Working Methodology

The project aims to collect and conserve farmers' varieties and PGRFA in national and Svalbard genebanks while strengthening community-based conservation initiatives. Farmers will be trained to register locally adapted varieties, and PGRFA will be reintroduced from genebanks. Promotional activities, capacity building, and participatory breeding approaches will support small-scale farmers. A public database will be maintained, and seed production will be enhanced through partnerships. Awareness of dietary diversity will be promoted, and PGRFA accessions will be made available through GLIS. Collaboration with policymakers and stakeholders will ensure effective conservation and policy development for sustainable PGRFA management.

Beneficiaries

The primary beneficiaries of this project are small-scale farmers, community genebank and seed bank members, students, and researchers, primarily from indigenous communities of the project sites. Farmers will receive training to enhance their capacity for on-farm conservation and variety registration. Funds will support conservation efforts and annual events like seed fairs, diversity fair, hat bazar. The initiative will promote a smart food value chain, facilitate germplasm exchange, and provide consumers with nutritious, healthy, locally available diverse food options while benefiting the global community.

For further detail

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Rational

Agricultural plant genetic resources (APGRs) are vital for Nepalese livelihoods but have been severely compromised due to the loss of native landraces and overdependence on foreign germplasm. Since the introduction of exotic high-yielding varieties, approximately 50-100% of local genetic diversity has been lost. This, coupled with a narrow genetic base in the field and the loss of associated biodiversity, has reduced resilience to climate change and pests. Small-scale farmers face difficulties maintaining seed systems, relying on costly inputs, and lacking access to climate-resilient varieties. While the National Genebank has made strides in conservation, many genetic resources remain unexplored, uncharacterized, and underutilized.

This project aims to address these gaps by enhancing the conservation, characterization, and utilization of APGRs. By building capacity among farmers, researchers, extension officials and local communities, improving seed systems, and fostering collaboration, the project will ensure food, nutrition, health, business and environment security, strengthen agrobiodiversity, and create sustainable agricultural practices, addressing challenges posed by climate change and other stresses.

Objectives

The main objective of this project is to address the lack of comprehensive conservation of agricultural plant genetic resources (APGRs) in Nepal, which has led to the loss of native genetic diversity and heavy reliance on foreign germplasm.

Specific objectives

- To enhance conservation and utilization of plant genetic resources in Nepal for food and nutrition security under unpredictable climate
- To contribute in enhancing conservation through utilization of agriculture genetic resources for climate change preparation
- To build a robust germplasm access and exchange mechanism for the country
- To build the capacity

Crops and Sites

Base on the backdrop, this project is mainly implemented in Kohalpur, Lumbini, and Madhyanepal, Lamjung and focusing on neglected and underutilized species in Amaranths, buckwheat, millets, lentil, naked barley, faba bean and other crops based on gap analysis and farming communities' needs. There are many other secondary sites.

Stakeholders

The project brings together a diverse range of stakeholders, including community seed banks (CSBs) Community Genebank Network. Key partners also include local government bodies from various rural municipalities across different provinces. Several organizations and enterprises contribute to value chain development and market linkages, while academic and research institutions, along with multiple departments under the Nepal Agricultural Research Council (NARC), support research, conservation, and capacity-building efforts. Government agencies such as the Ministry of Agriculture and Livestock Development (MoALD), the Seed Quality Control Center (SQCC), and other specialized research centers play a vital role in policy formulation and implementation. Collectively, these stakeholders aim to enhance the conservation, utilization, and commercialization of PGRFA across Nepal. Many NGOs and relevant stakeholder will involve.

Funding agency and Period

The International Treaty's new Funding Strategy features the Benefit-sharing Fund (BSF, managed by FAO) as a key component, operating through global calls for proposals and a competitive selection process and partial in-kinds support from NARC. Project period is of 4 years (20 April 2024 to 20 April 2028).

Project management

The project envisions a Project Coordination Committee. Under this committee, the Project Execution Committee will be led by the Principal Investigator, who also serves as the Chief of the National Genebank. Four sub-committees will be formed to execute project activities, focusing on research, capacity building, knowledge management, and collaboration to enhance PGRFA innovation, management, and conservation. The Partnership and Collaboration Unit will oversee active participation and contributions from all partners.