BIHAR FIELD VISIT

Summary Report

April 2-4, 2025

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BIHAR FIELD VISIT

SUMMARY REPORT

April 2-4, 2025

The field visit planned to demonstrate the process of creating a field action plan using participatory tools like e-PRA and the *Fasal Chakra* Exercise. A Macro Plan was developed to identify focus areas. A Sample Micro Plan for critical areas was also explored.

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बैल बिकाइल बीए ला

I was farming just to make a living, but had to sell my oxen just to buy seeds

ACKNOWLEDGMENT

This field visit report was prepared by Ms. Prachi Patil, Mr. Monuhar Pegu, Mrs. Diksha Alok, and Mr. Malyaj Shrivastava.

We extend our heartfelt gratitude to the farmers of Rampur Brahmdas for their active and overwhelming participation during the planning exercise. Their insights and cooperation were invaluable in shaping the planning process. The field Staff Ms. Shalini ji from Nav Bihar Samaj Kalyan Pratisthan Kendra, for mobilizing the community during the field work and actively getting involved in the planning process.

We also thank the entire H-I Bihar team for their enthusiastic participation and commitment to understanding how the planning process contributes to developing a Macro Action Plan.

Special thanks to Mr. Anish for his support in managing all field logistics, ensuring the smooth execution of the visit.

SUMMARY OF KEY POINTS

1. CROP DIVERSIFICATION AND RESILIENCE BUILDING

Critical Gap: Rampant monocropping of paddy and wheat has led to rising input costs, low dietary diversity, and increased climate vulnerability. Traditional diversified systems—like millets and mixed cropping—have largely disappeared.

Key Activities:

- Design Seasonal Crop Calendars: Develop participatory, land-type–specific crop calendars that integrate cereals, pulses, oilseeds, vegetables, and fodder crops.
- Revive Traditional Millets:Reintroduce hardy, low-input millets (e.g., kodo, barnyard, foxtail) on upland and water-stressed plots through seed kits, demonstrations, and recipe revival campaigns.
- Pilot Diversification Models with Early Adopters: Support progressive farmers already practicing intercropping (e.g., wheat + mustard + flaxseed) as "demo champions" to mentor peers; establish model plots for collective learning.
- Promote Bund and Inter-row Cultivation: Utilize crop bunds for pulses, vegetables, and green manure species (e.g., dhaincha), improving soil health and system productivity.
- Establish Local Processing and Market Linkages:Facilitate community-level processing of diversified crops (e.g., dal milling, cold-pressed oils) and connect producers to local and institutional markets to create incentives for diversification.

2. REVIVAL OF INDIGENOUS AND LOCAL SEED SYSTEMS

Critical Gap: Limited adoption of indigenous seeds due to perceived lower yield and lack of organized access systems.

Key Activities:

- Conduct **community-led trials** comparing hybrid vs. desi seeds to demonstrate benefits (e.g., cost, resilience).
- Organize **Seed Melas** and **Seed Fairs** for knowledge exchange.
- Establish **Community-Managed Seed Systems (CMSS)** through SHGs or Farmer Producer Groups.
- Identify and train **'Seed Champions'** for seed selection, conservation, multiplication and marketing.

3. SUSTAINABLE AND INCLUSIVE IRRIGATION MODELS

Critical Gap: High dependency on privately owned borewells increases cost and creates inequitable access common groundwater resource.

Key Activities:

- Form **Common Interest Groups (CIGs)** to plan shared irrigation solutions.
- Promote **solar-powered irrigation units** and **portable micro-irrigation systems** (drip/sprinkler).
- Initiate **pilot farm ponds** with convergence from government schemes.
- Demonstrate **SRI/SWI methods** to reduce water needs and improve yield.

4. FODDER AND FEED SYSTEM STRENGTHENING

Critical Gap: Seasonal fodder scarcity, especially during summer months (April–June), impacting livestock nutrition.

Key Activities:

- Promote **local tree fodder plantations** (e.g., Bakula, Khata) around homesteads.
- Intercrop fodder species (e.g., jowar, cowpea) within orchards and along bunds and integrating fodder crops in main crops.
- Establish village-level enterprises for producing and marketing nutritious livestock feed and mineral mixtures, leveraging SHGs or youth groups. Link smallholders with **local feed entrepreneurs** to ensure access to formula feed.

5. GOAT HEALTH AND LIVESTOCK PRODUCTIVITY

Critical Gap: High mortality rate in goats due to inadequate preventive care and poor early nutrition.

Key Activities:

- Roll out **annual vaccination/deworming schedules** in collaboration with veterinary services.
- Train and deploy **Pashu Sakhis** for doorstep animal health services.
- Promote **nutritional protocols for pregnant goats and weaners**.
- Pilot **record-keeping tools** for herd health tracking.

6. DIVERSIFYING THE HOUSEHOLD FOOD PLATE

   Critical Gap: Heavy dependence on market-sourced vegetables especially during summer months).

   Key Activities:

   - Expand and diversify **kitchen gardens** with year-round vegetable models.
   - Promote **uncultivated and wild edibles** through food mapping exercises.
   - Facilitate **seed access for tubers and leafy greens** through SHG seed banks.

7. ORCHARD DIVERSIFICATION AND INTENSIFICATION

   Critical Gap: Mono cropped orchards (e.g., mango) underutilize space and resources.

   Key Activities:

   - Promote **multi-layer orchard systems** (trees + shrubs + vegetables+fodder).
   - Intercrop vegetables and fodder in existing mango/bamboo plantations.

BIHAR FIELD VISIT
SUMMARY REPORT

BACKGROUND

After the Koraput workshop on orientation to participatory planning tools viz. EPRA and fasal chakra held in December laid the foundation for demonstrating the development of action plans through field-based learning. To put these concepts into practice, a field visit was organized from 2nd to 4th April in Rampur Brahmdas village, situated in the Vaishali district of the Heifer India site in Bihar. This village is a major focus area for the H-I Bihar team under its ongoing signature project that emphasizes Goat rearing, Agriculture, and Backyard Poultry. Key interventions introduced by the H-I Bihar team include Bio-inputs preparation, Mulching, Multi-cropping, Kitchen Gardens, and Convergence with KVKs (Krishi Vigyan Kendras). These initiatives aim to foster sustainable farming practices and improve the livelihoods of the local community.

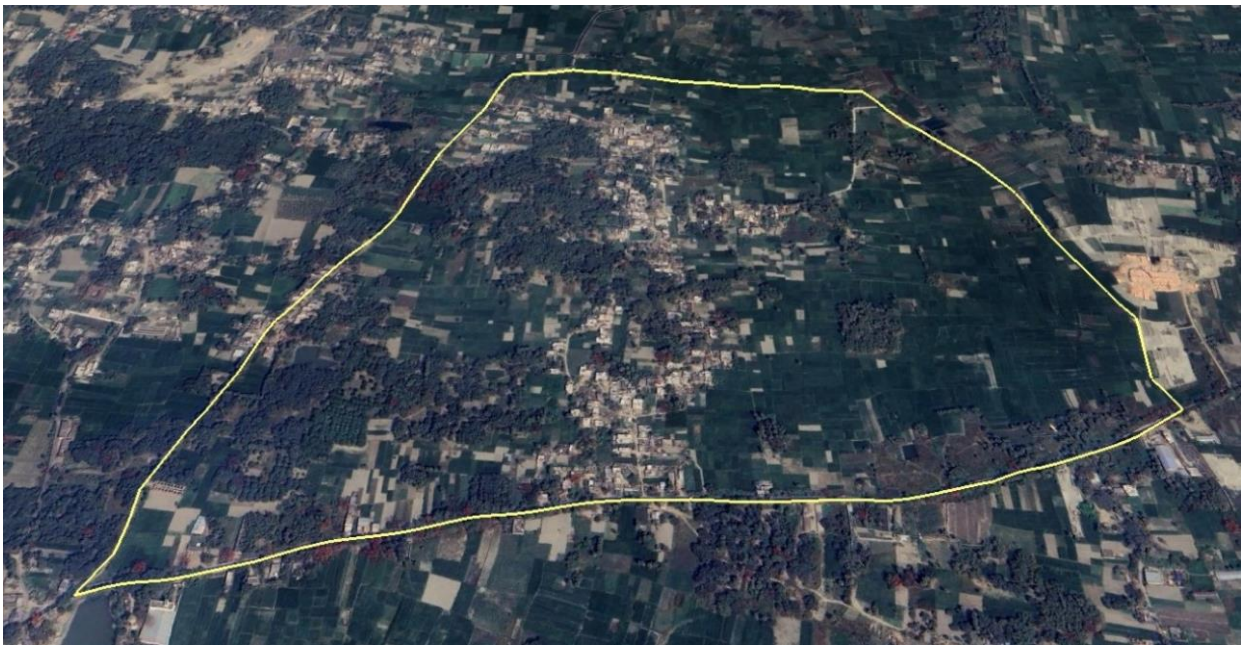


Figure 1: Village Boundaries of Rampur Brahmdas, as identified by the local village community during EPRA exercise

PURPOSE OF THE FIELD VISIT

The **primary purpose of the field planning exercise was** to demonstrate the process of developing an action plan using participatory planning tools and methods such as ePRA an**d** Fasal Chakra.

VILLAGE PROFILE

Rampur Brahmdas is a village located in Jaffarpatti Panchayat of Vaishali District, Bihar. Situated in the fertile plains of the Gangetic basin, the village spans approximately 350 acres and comprises 130 households, distributed across four habitations: Purwari Tola (40 households), Uttari Tola (30), Dakshinwari Tola (30), and Paschim Tola (30). The social composition is largely made up of OBC and SC communities, with a few general category families. Female literacy is relatively low, and migration—especially of men to nearby towns and other states for wage labor—is a common livelihood alternative.

More than 80% households in Rampur Brahmdas are small and marginal farmers with average landholdings of less than 0.5 - 1 acres (10–15 kattha). Around 10 households are landless. Agriculture is the primary source of livelihood, supplemented by livestock rearing and wage labor. Nearly every household is involved in goat rearing, while about 20% also own cattle like cows and buffaloes, and around 5% rear poultry. Cropping is practiced in all three seasons—Kharif, Rabi, and summer—with paddy, wheat, maize, green gram (moong), and vegetables being the main crops cultivated.

Rampur Brahmdas faces several challenges including soil degradation, overdependence on chemical inputs, water stagnation in some areas, limited market access, and declining productivity. Farmers have limited access to formal extension services and institutional support, particularly those with fewer resources. However, the presence of active women's Self-Help Groups (SHGs), along with Civil Society Organizations (CSOs), and the local Krishi Vigyan Kendra (KVK), provides a strong platform for community mobilization and knowledge exchange.

In recent years, efforts to introduce agroecological and natural farming practices have started to take root in the village. These practices are being supported by local organizations and farmer networks and are seen as a pathway to restoring soil health, reducing cultivation costs, reviving traditional knowledge, and building climate resilience. The field visit and participatory exercises conducted in village aimed to deepen the understanding of this transition, assess on-ground realities, and strengthen the collective vision for sustainable agriculture in the region.

OUTLINE OF THREE DAYS OF FIELD VISIT

- ***Day 1, 2nd April 2025:*** The field visit began with a community meeting to present the three-day plan, outlining the objectives and expected outcomes. The initial exercise focused on understanding different land types in the village based on cropping patterns, which helped identify key agroecological zones. The community was then divided into two groups to conduct participatory exercises using the Fasal Chakra and ePRA methods, which surfaced several critical issues requiring strategic attention. Later, the facilitation team held an internal discussion to review current production and resource management practices and shortlisted strategic focus areas for deeper analysis on the following day.

- ***Day 2, 3rd April 2025;*** The day started with a summary of the previous day's learnings and a revisit of the key strategic concerns. The community was divided into two focus groups: one concentrated on crop production systems and associated challenges, while the other explored water and fodder-

related issues. Discussions were enriched using insights from Day 1's Fasal Chakra and EPRA analysis. Some good practices already being followed by farmers were also discussed. Post community interaction, the teams regrouped to reflect on emerging solutions and identify gaps in the current micro plans, particularly related to crops and water.

- **Day 3, 4th April 2025:** Third day started with a transect walk conducted through the village, covering homesteads, settlement zones, and diverse land types. Along the route, the team interacted with different farmer groups including livestock keepers, vegetable growers, maize cultivators, and those practicing mixed or alternative farming systems. The walk offered a direct understanding of land use practices, resource challenges, and farmer innovations, helping to validate and deepen insights gathered in the earlier sessions.

METHODOLOGY

The development of the action plan in Rampur brahmdas village was guided by participatory planning tools and community-led assessment exercises to ensure contextual relevance, inclusivity, and sustainability. The methodology followed a structured yet flexible approach over two and a half days, involving 20–25 participants from diverse social and gender groups within the village. The key components of the methodology are as follows:

PREPARATORY WORK

Before initiating participatory exercises, a preparatory step was taken to demarcate the perceived village boundaries using Google Earth in consultation with the community and H-I team through online meeting. The printout of this map was used during planning sessions to mark all the spatial discussions and improve visual understanding.

ORIENTATION AND GROUP FORMATION

The process began with an orientation of the community, explaining the purpose and process of the participatory planning exercise. This helped align expectations and encouraged active engagement. Following this, the community was divided into smaller, focused groups to ensure details and engaging discussion.

USE OF PARTICIPATORY TOOLS

A set of structured participatory tools were used to guide the assessment and planning:

A. ELECTRONIC PARTICIPATORY RURAL APPRAISAL (E-PRA):

This tool was used to assess the current status and changes over time in natural resource management and production systems. The exercise involved spatial mapping and interactive discussions, using Google Earth village map to aid visualization. This helped explore interrelations among natural resources and production systems, identify areas of degradation, and highlight adaptation strategies. Key Components Included in the Discussion During the e-PRA Exercise:

- Demographic Overview of the Landscape
- Land types and cropping pattern
- Livestock Profile and Fodder Availability
- Water/Irrigation Sources and Seasonality
- Natural Resource Mapping (water, forest, land) and its status
- Common lands
- Other

B. *Fasal Chakra* (CROP CYCLE EXERCISE):

Fasal Chakra, meaning "Crop Cycles," is a participatory method designed to explore the interconnectedness of crop systems with land, soil, and climate dynamics. By integrating community knowledge, it helps in understanding crop patterns, vulnerabilities, and trends at the landscape level.

The Fasal Chakra Exercise is a participatory tool used to map the seasonal cropping patterns practiced by farmers across different agricultural seasons—Kharif, Rabi, and Summer. Through this exercise, community members collectively document the types of crops grown, seed varieties used (desi or hybrid), input practices, and associated challenges throughout the year.

It helps in understanding shifts in cropping patterns over time, the extent of diversification or monocropping, dependence on external inputs, and the integration of natural farming practices. This visual and discussion-based tool also brings out farmers' indigenous knowledge and highlights opportunities for introducing agroecological alternatives suited to local

conditions. The tool relies on indigenous knowledge and enables discussions around land-use efficiency, sustainability, and climate resilience.

[Fasal Chakra exercise in process]

Through tools like the Evaluative Participatory Rural Appraisal (ePRA) and Fasal Chakra (Crop Cycle) Exercise, the aim was to:

- Assess the extent and nature of adoption of natural farming practices.
- Document changes in cropping patterns, resource use, and livelihoods over time.
- Understand socio-ecological impacts such as soil health, biodiversity, and household well-being.
- Capture farmers' knowledge, experiences, challenges, and aspirations through inclusive, community-led discussion.
- Generate insight that can inform programmatic planning, capacity building, and scaling of context-specific agro-ecological intervention.
- To build a collective understanding of the transformation journey in the village and identified areas, where requiring further support or innovation.

C. TRANSECT WALK

A participatory field walk with farmers to observe and discuss land use, crops, soil, and natural resources. It helps to relate the data which has come out during the exercises. Discussions during the walk with different farmer groups validated insights from earlier exercises.

THEMATIC GROUP DISCUSSIONS AND PRIORITIZATION

Insights gathered from the tools were used to conduct in-depth discussions on priority themes such as water and fodder availability, crop productivity, land management, and livestock systems. Existing best practices, innovations, and adaptation measures were also documented. Strategic issues were shortlisted for integration into the action plan. All these emerging points were populated on the google earth map and fasal chakra.

SYNTHESIS AND ACTION PLAN DRAFTING

Post-field exercises, the facilitation team synthesized the findings, identified gaps in existing micro-plans (especially for water and crops), and incorporated suggestions from the community. This laid the foundation for an action plan.

Major Components discussed

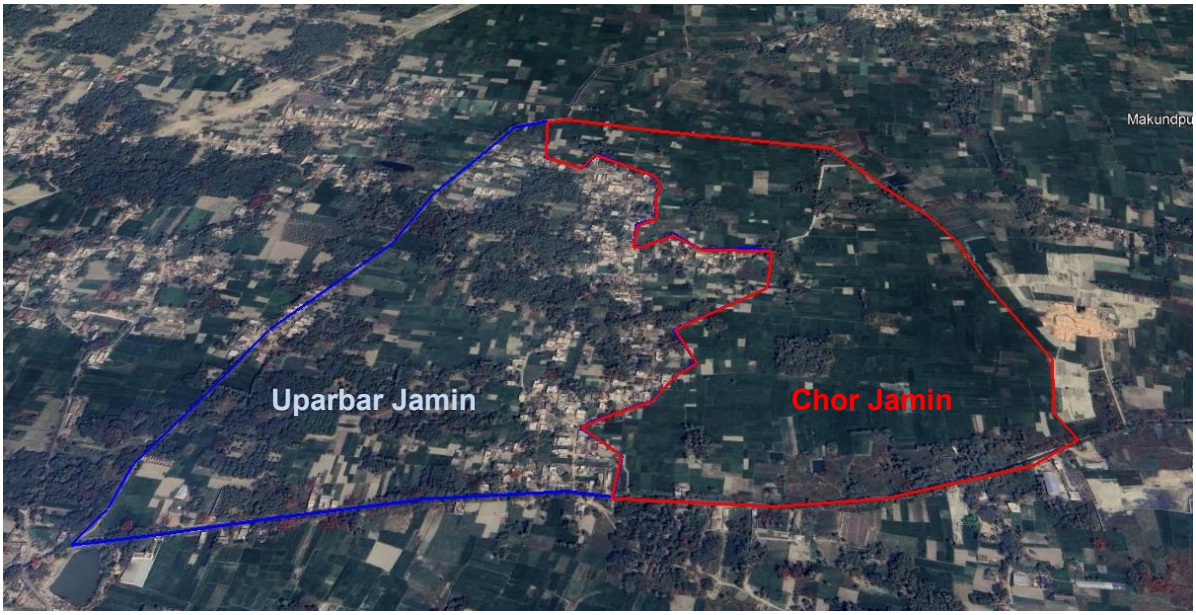
1. Seeds & Crop Diversity
2. Water
3. Agricultural Practices (Homestead and mainland)
4. Livestock – Goatary
5. Horticulture Plantation
6. Wild Animal Attack on crops
7. Crop management practices and Cost of Cultivation for major crops (Paddy and Wheat)

THEMATIC FIELD INSIGHTS AND ACTIONABLE AREAS

1. **Land Type:** After the orientation of the community on the purpose of fieldwork, the discussion began with understanding the different crops cultivated by farmers and the types of land present in the area. Two main types of land were identified: Uparbar Jamin and Chaur Jamin.
2. ***Uparbar Jamin***
    - These are mostly uplands formed by sandy soil around homestead lands.
    - Typically, 3–4 crops are cultivated here.
    - There is some provision for irrigation, either through hand pumps or borewells.
    - Crops such as paddy, wheat, maize, mustard and pulses are commonly grown. Vegetables like potatoes, garlic, gourds, and leafy vegetables are also cultivated in this land type. Kitchen Garden in homestead land are part of uparbar Jamin
    - 60% of the land type is Uparbar jamin

3. ***Chaur Jamin:***

- This land type has slightly black soil, which is considered fertile.
- Majorly, two crops are cultivated here—paddy followed by wheat.
- Some farmers also grow green gram in small parcels of land, but only if water is available after the wheat harvest. Sesame and Pigeon Pea are the long duration crosps taken by some farmers
- A large portion of Chor Jamin is left fallow after the wheat crop is harvested due to the unavailability of water.
- 40% of the land is Chaur jamin. Chaur is more fertile than Upawar land



[Local land types identified by the community during ePRA exercise]

[Soil type of Chaur Jamin land type]

After understanding the major crops cultivated, the land types, and their characteristics, the community was divided into two groups:

- **Group 1:** Focused on a detailed understanding of the crop production system, its challenges, and the locally available solutions using the Fasal Chakra exercise.
- **Group 2:** Engaged in a focused discussion on natural resources and livestock, employing the ePRA planning tool.

Detailed field observations, along with the current challenges and potential solutions, are documented below

NATURAL RESOURCES

THEME – 1: WATER

Field Observations and issues identified:

- **Majority of the village is rainfed.** Only 16 farmers have access to borewells. All the borewells are functional and owned by individuals These borewells were introduced in the village after the 1980s, with depths ranging from approximately 90 - 100 feet.
- **Irrigation Access and Charges:** Almost all landowning farmers purchase water from the borewell owners during the Kharif and Rabi seasons to irrigate paddy and wheat crops. The charges are ₹200/hour for diesel pumps and ₹150/hour for electric pumps. For paddy, non-borewell farmers typically purchase water three to four times. For wheat, a minimum of three irrigations is required. Based on water availability, farmers cultivate green gram on small patches of land. Farmers growing green gram usually buy water for two irrigations.
- There are no farm ponds. Some farmers had wells but they have no water.
- **Issues Identified:**
    - High cost of critical irrigation, especially when using diesel pumps.
    - Significant water wastage during transportation from the water source to the fields, as water is sometimes transported over distances of 2,000 to 3,000 feet.
    - The predominant mode of irrigation in the area is flood irrigation, leading to inefficient water use.

FIELD ANALYSIS

Water Purchase and Irrigation Costs in the Village: Sample data of few farmers was taken to understand this in detail. The table indicates the number of borewell-owning farmers, as well as the number of farmers and the area dependent on purchasing water.

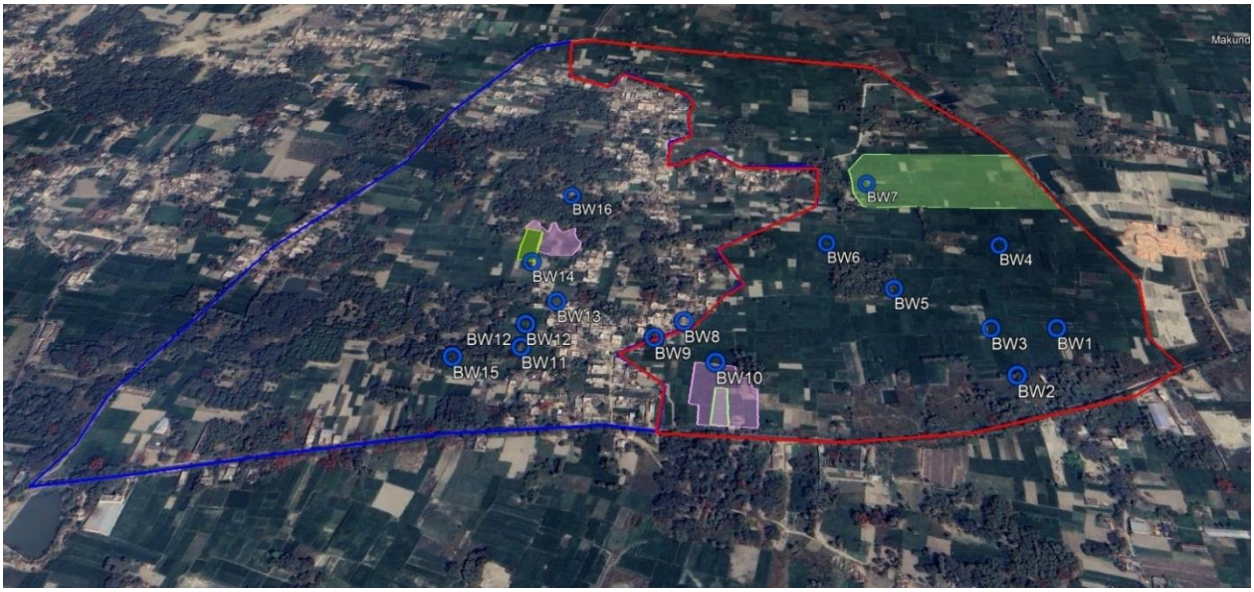
Famer Name	Own Farm	Sell Water	Total Irrigated area by one borewell
Nagesh	0.87 Areas	7-8 farmers	6 – 7 acres
Param Singh	0.87 Areas	12 farmers	3.5 to 4 acres
Raman Shingh	0.87 Acres	5-6 farmers	4 acres
Suresh Singh	0.43 Acres	10 farmers	~ 4 acres
Sundar Singh	0.43 acres	5 farmers	1.74 acres

Farmers typically purchase water at least three times during the kharif season for paddy crop. One round of irrigation is used during land preparation, followed by two critical irrigations during dry spells. On average, a farmer spends approximately ₹6,000–₹7,000 per acre for irrigation during the paddy season. The high cost is largely due to the use of diesel pumps, which require diesel fuel and engine oil. Borewell owners, who supply this water, generally earn a profit of 1000 – 2000 Rs per acre per season from water sales.

Similarly, wheat cultivation requires a minimum of three irrigations. Farmers growing wheat after paddy also spend ₹6,000–₹7,000 per acre for irrigation. As a result, a farmer cultivating both paddy and wheat typically spends ₹12,000–₹14,000 per acre annually solely on irrigation. In addition, some farmers cultivate green gram (moong) on smaller land patches, approximately 0.022 acres, for which irrigation costs range from ₹1,000 to ₹2,000. **In total, the estimated irrigation cost for cultivating a paddy–wheat–moong sequence in this village ranges between ₹13,000 and ₹15,000 per acre annually.**

Even conservatively, if around 80 households purchase water for approximately 150 acres of land, the total expenditure on irrigation within the village amounts to ₹20–22 lakh per year.

Even conservatively, if around 80 households purchase water for approximately 150 acres of land, the total expenditure on irrigation within the village amounts to ₹20–22 lakh per year. This figure highlights not only the high-cost burden on smallholder farmers but also the significant water losses and systemic inefficiencies involved in the current water-sharing arrangements.



[Borewell location in the village and average range of water sharing area (1 - 10 acres) by bore well farmers]

SCOPE OF WORK

Given the current challenges related to water selling in the village, small Common Interest Groups (CIGs) comprising 15–20 households, covering approximately 25–50 acres, can be formed. These groups should include both borewell and non-borewell farmers. Through structured discussions, these groups can collaboratively develop a water-sharing mechanism that ensures equitable access and efficient use of available water resources.

To further strengthen water security, a common borewell may be established through government convergence and farmer contributions. To ensure the long-term sustainability of such shared systems, clearly defined social norms and usage protocols should be developed and followed by all members of the group.

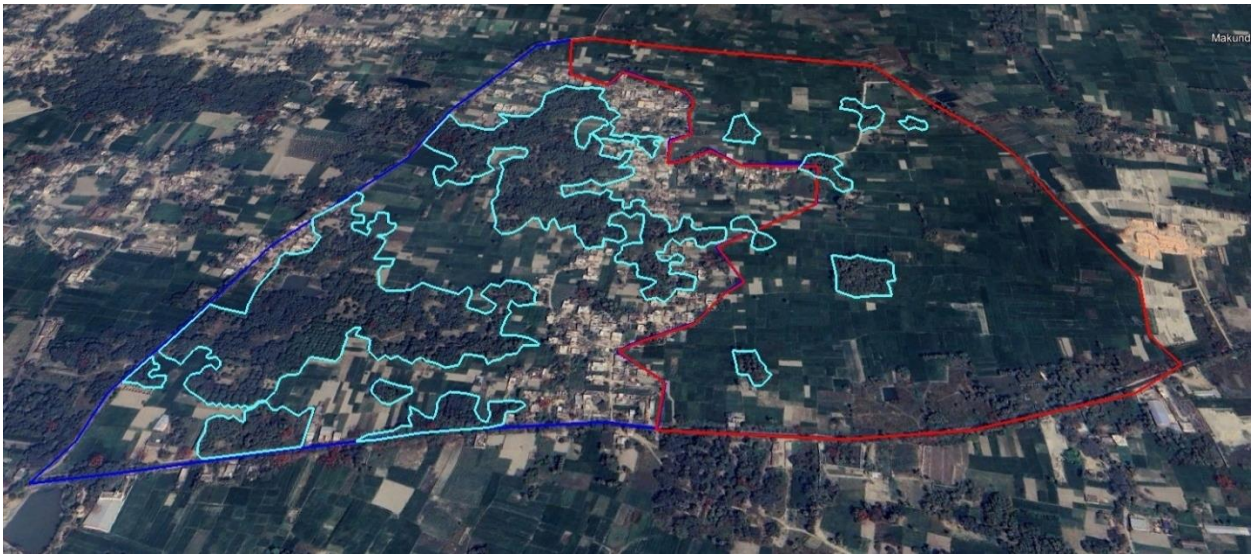
There is also strong potential to promote solar-powered irrigation systems within these CIGs, reducing dependence on diesel or grid electricity and lowering irrigation costs. Additionally, common portable equipment—such as water conveyance pipes and micro-irrigation systems—can be made accessible through linkage with local institutions. These resources can be managed on a rental basis, promoting inclusive access and optimal resource utilization across the community.

Exploring the possibility of convergence with government schemes for constructing runoff-based farm ponds. These farm ponds can be utilized for dual purposes: one, to provide critical irrigation; and two, to intensify the use of farm ponds through bund plantation with fruits and vegetables. The water in the farm ponds can also be utilized for fisheries after assessing local consumption preferences and demand.

THEME – 2: HORTICULTURE PLANTATION

Field Observations and issues identified:

- Horticultural plantations of mango and bamboo are common on the Uparbar Jamin.
- Every household has at least one or two mango, bamboo, litchi, papaya, or banana plants in their homestead land.
- Approximately 70–80 acres of horticultural land belong to Rajput families from another village.
- Bamboo plantations are commonly used for making tents, plant protection structures, house roofing, firewood, and grain storage containers.
- A significant portion of the bamboo plantation, enabling grasses to grow, serves as a source of fodder for livestock during the summer season.
- There are a good number of palm trees, and people harvest taari as well.
- Almost all the horticultural plantations follow a monocropping system.



[Horticulture Plantation majority in Uparbar Jamin]

SCOPE OF WORK

There is significant potential for horticulture crop diversification and intercropping within the mango plantation areas. Moreover, these horticultural plantations offer strong scope for introducing multi-cropping systems and cultivating vegetables, which can enhance both food and income security for vulnerable households.

Given the recurring fodder shortages during the summer and the community's reliance on grasses from dense bamboo plantations, there is an opportunity to strategically introduce fodder crops through intercropping in these zones. Promoting locally adapted and diverse fodder species can ensure a sustained supply of fodder during lean periods, especially benefiting landless and smallholder farmers who rear livestock. To take this forward, a dedicated meeting can be organized involving horticulture plantation owners, landless farmers, and smallholders with livestock, to discuss the plan in further detail and explore potential implementation strategies.

THEME – 3: CROP PRODUCTION SYSTEM

Field Observations and issues identified:

- **Uparbar Jamin:** Paddy (50%), Maize (40%), and vegetables (10%) area is **cultivated around the year** in this land type. This land is **near the homestead** land. Some farmers also cultivate wheat (70%), Mustard (5%), Flaxseed (5%), Barley on border (2%) and vegetables (15%) in this land. Farmers either irrigate by purchasing water or also irrigate through the handpumps available near at Household level as the landholding is smaller in size.
- **Chaur Jamin:** Paddy followed by wheat are the major crops cultivated in this land type. During rabi some farmers also cultivate mustard, flaxseeds and lentil in small proportion mixed in wheat crop. The majority of the land is kept fallow for 2–3 months after the crop is harvested. Some farmers cultivate green gram, sorghum and dhaincha in one to two cents of land during summer.
- **Homestead land:** Farmers mainly cultivate vegetables on the homestead land. Since the water requirement is very low, farmers tend to apply water using the handpumps located near every household. Refer to the Fasal Chakra table for details of vegetables cultivated**.**
- Twenty years ago, farmers used to cultivate a wide variety of crops including maize, sugarcane, Finger Millet, Barnyard Millet, Kodo Millet, Little Millet, Foxtail Millet and, tobacco (khainee), along with pulses like Raha dal and Pigeon Pea. At present, cultivation has narrowed down mainly to paddy, wheat, maize, and mung.

<u>CHALLENGES</u>

- **Monocropping** is prominently practiced in almost all the major crops (paddy, wheat, maize) in both the land types
- **Climatic Risk:** More than 90% of the area is rainfed where the crops are subjected to risk due to irregularities in rainfall and dry spell. Although some facilities to provide critical irrigation area available the cost of irrigation is very high. Another climatic vulnerability is the flooding during the time of harvest of Paddy crop which destroyed crops once in last 10years.
- **Migration:** Majority of male farmers of the village migrate after sowing of paddy in different states for labor work. Majority of the agriculture labor work is done by women.
- **Wildlife Conflicts:** Nilgai (blue Bull)– Wildlife causes significant crop loss in the village. This has been highlighted as the most important challenge by farmers. A few farmers have installed solar fencing, while some keep watch to protect the harvest. A local practice of surrounding the crops field with old sarees is also currently in use.
- **Higher input cost:** Inputs cost on fertilizer, irrigation, seeds and pest and disease management is the highest in the major crops. The highest input cost is for irrigation (25%), followed by fertilizer and micronutrient application (21%), land preparation (12%), and labor cost for harvesting. *Refer table no. 1 on cost of cultivation of paddy*.

- **Seeds:** All seeds are generally purchased from the market. However, some farmers preserve vegetable seeds for the next season and year, including local varieties of potato, ridge gourd, coriander, and brinjal. Farmers have not widely adopted indigenous or local seeds because they believe there is a yield difference between desi and hybrid varieties. According to them, hybrid seeds produce higher yields, while desi seeds give comparatively lower yields in both crops and vegetables. However, there is a common practice of preserving wheat seeds from the previous harvest for use in the next season, with the same seeds often being reused for 2–3 years.

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  If we assume on the conservative side that 120 households have 150 acres of land, the cost spent on the purchase of seeds for two seasons ranges between ₹6.5–7.5 lakh. Similarly, the cost of fertilizers spent by the village ranges between ₹30–35 lakh for two seasons. If irrigation costs are also included, then 130 households spend nearly ₹80–90 lakh annually only on inputs for the cultivation of two crops.
- **Crop cultivation practices**: Line sowing is observed only in some maize plots; apart from this, broadcasting is the common practice followed in the village. A few farmers tried the SRI method with support from the HI team, but the majority still follow the conventional method.

Some of the good practices exist within village.

- A few farmers mix the green gram crop biomass into the soil after harvesting.
- Dhaincha is cultivated by a few farmers before the Kharif season and mixed into the soil.
- The wheat crop is diversified with mustard and flaxseed. Mustard is cultivated as a mixed crop with wheat, while flaxseed is grown as a border crop in wheat fields. The wheat-to-mustard ratio is approximately 90:10.
- Farmers generally extract oil at the nearby gram panchayat, which is consumed locally.
- Two farmers who tried SRI (promoted by the H-I team) got nearly double the yield and are continuing the practice
- Farmers practice application farmyard manure. Many of them generally purchase it from nearby areas.
- Farmers have a labor-sharing practice where neighboring farmers do labor.
- The practice of mixing and applying dried cow/goat dung with ash from firewood burning and other dried biomass is followed before land preparation.

Image: Local practice of mixing Ash, Dung and biomass and its application in field

Image: Monocrop Wheat cultivation

INFORMATION FROM FASAL CHAKRA EXERCISE

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Rainfall Pattern			I	III	III	IIII	III	I					I - Lowest Rainfall IIIII - Highest Rainfall
Land Type	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	Remark
Medium Land (Chaur)			Paddy (N)	Paddy (T)				Paddy (H)					N - Nursery
								Wheat (S)				Wheat (H)	S - sowing
								Mustard(S)				Mustard (H)	H - Harvesting
								Flaxseed (S)			Flaxseed (H)		T - Transplanting
								Lentil (S)			Lentil (H)		
	Moong (S)		Moong (H)										
	Sorghum (S)		Sorghum (H)										
	Dhaincha (S)		Dhaincha (H)										
Upper Land (Upawar)		50%	Paddy (N)	Paddy (T)				Paddy (H)					
		40%	Maize (S)				Maize (H)						
		10%	Vegetable (S)	Brinjal, Okra, Chilli, Ginger, Turmeric			Vegetable (H)	Wheat (S)	70%			Wheat (H)	

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
								Mustard(S)	5%			Mustard (H)	
								Flaxseed (S)	5%		Flaxseed (H)		
								Barley (S)	Border 2%		Barley (H)		
								Pea (S)	5%		Pea (H)		
								Coriander (S)	3%		Coriander (H)		
							10%	Vegetable (S)- Potato, Cabbage, Cauliflower, carrot, radish, Chili, Onion, coriander, Kusum, Shaljam, bitter gourd, etc			Vegetable (H)		
	Maize(S)	5%	Maize(H)										
	Vegetable (S)	10%	Vegetable (H)										
Homestead Land								Vegetable (S)- Potato, Cabbage, Cauliflower, carrot, radish, Chili, Onion, coriander, Kusum, Shaljam, bitter gourd, etc					
												Leafy Vegetable	
												Brinjal	

COST OF CULTIVATION FOR PADDY CROP

Particular	Unit	Cost	Conversion	Total Cost/Acre	% of the total	Internalize
Land Preparation - Main plot	Kattha	300	22.5	6750	12%	
Seed	Kg	400	6	2400	4%	
Transplantation		200	22.5	4500	8%	
DAP (Diammonium Phosphate)	kg/kattha	300	22.5	6750	12%	
Potash	kg/kattha	30	22.5	675	1%	
Thymus	kg/kattha	50	22.5	1125	2%	
Nitrogen	kg/kattha	10	22.5	225	0.4%	
Calcium	kg/kattha	50	22.5	1125	2%	
Zium	kg/kattha	70	22.5	1575	3%	
weeding	Rs/Katha	200	22.5	4500	8%	
Harvesting	Rs/Katha	300	22.5	6750	12%	
Irrigation	4/Entire Crop	600	22.5	13500	25%	
Packaging		20	40	800	1%	
Threshing	Rs/Hr	1000	4	4000	7%	
Total			**4500**	**54675**		

After completing the Fasal Chakra exercise, along with some farmers sharing their experiences of good practices and analyzing the cost of cultivation for the paddy crop, the data was presented to the farmers. During the fieldwork, they expressed the following views:

COMMUNITY PERSPECTIVE FOR SOLUTIONS

- I**mproved Seed Availability:** There is a need to make more seeds easily available to farmers within the village.
- **Reduced Input Costs:** The cost of seeds and fertilizers (both chemical and organic) needs to be reduced, as farming is becoming increasingly expensive.
- **Affordable Water Access:** The cost of water must be brought down; currently, buying water is a major challenge for many farmers.

- **Low-Cost Inputs:** Farmers prefer farming practices that require less investment in fertilizers, pesticides, and water.
- **System of Rice Intensification (SRI):** While SRI is known to be beneficial, many farmers find it labor-intensive and time-consuming.
- **Collective Transplantation in Paddy Fields:** Farmers are practicing and prefer collective transplantation as it reduces labor costs and improves efficiency.
- **Custom Hiring Centres (CHCs):** There is a demand for establishing CHCs through farmer groups. These can also be supported through government schemes and subsidies.
- **Local Seed Preservation:** Both individual and collective efforts to preserve local seeds are seen as important and should be promoted.
- **Organic Manure Access:** Organic manure is preferred over DAP and urea. There is a need to ensure a regular supply of organic manure within the village.
- **Use of Ashes as Fertilizer:** Farmers are adopting traditional practices such as mixing ashes with goat dung and spreading it in the fields, which helps improve soil fertility.
- **Green Fodder Cultivation:** Farmers are interested in cultivating green fodder but require support (specific needs can be detailed further).

SCOPE OF WORK

- **Crop Diversification:** The majority of farmers practice monocropping in both paddy and wheat. There is a good scope to diversify these systems by converting them into polycropping systems. Based on the Fasal Chakra, a crop diversification model can be designed in consultation with the community. This crop diversification can include crop combinations that support household nutrition, meet fodder requirements for livestock, improve soil health, and balance household income. These systems will enhance soil health and build resilience to protect crops from dry spells. A few farmers are already diversifying wheat with mustard and flaxseed. Such farmers can be identified and encouraged to further diversify their crop systems. These farmers can later support and train other farmers in the community. There is also scope to intensify the farm bund during paddy crop with pulses and vegetables.
- **Reviving Millet Cultivation and Consumption:** Historically, this region has been known for millet consumption, but millet cultivation has now completely disappeared. Farmers who face critical issues in accessing water during the Kharif and Rabi seasons can be identified, and millets—being resilient and less water-intensive crops—can be promoted on their plots. Extensive awareness campaigns on millet production and consumption, along with training on the revival of traditional millet-based recipes, can encourage farmers to both cultivate and consume millets locally.
- **Scope for reduction in inputs cost:** The input cost for fertilizer, seeds, and irrigation in the village ranges between ₹80–90 lakh annually. Locally, a few farmers have been practicing natural farming by applying bio-inputs. These farmers can be further trained and supported to become resource persons who will guide and handhold other farmers in adopting bio-input preparation and natural farming practices. The experience generated from this piloting can be scaled up across the village.
- **Revival of Existing Indigenous and Local Seeds**: Reviving indigenous and local seeds is essential for sustainable farming. Organizing Organic Seed Melas at village, block, and state levels will allow farmers to exchange and conserve traditional seeds. There is a need to assess local demand for crops like paddy, wheat, and moong, and promote Community-Managed Seed Systems (CMSS)

through local institutions. These efforts can help establish farmer-led seed enterprises, reduce input costs, and strengthen seed sovereignty.

- **Improved Cultivation Practices**: Two farmers practiced SRI in paddy with the support of H-I. Based on the discussion with them during the field work, these farmers mentioned that their yield nearly doubled, and they will continue this practice next year without any external support. Such farmers can become champion farmers to train other farmers in promoting SRI in the village. Similarly, there is scope to introduce the System of Wheat Intensification (SWI) in the village. A few pilots with some farmers can be initiated, and based on their experience, it can be scaled up.

Identification of existing good practices in the villages, followed by further training of these farmers and piloting the practices on their fields, can unlock significant potential for scaling up these practices among other farmers.

THEME – 4: LIVESTOCK PRODUCTION SYSTEM

Field Observations and issues identified:

- **Goats:** Nearly all the Households (130 households) rear goats, indicating it is the most commonly owned livestock in the village. Most of the households have a goat shelter inside the house.
- **Cows and Buffaloes:** Around 20 households' own cows or buffaloes, suggesting limited ownership of large ruminants. Large scale animals (Livestock - cow, bull, buffalo etc) population is very less comparatively land availability in the village.
- **Poultry:** Only 1% to 2% of households are engaged in poultry farming, showing minimal presence of backyard poultry. Two or three families have been rearing poultry, but now all the poultry have died. There are two poultry shelters found in the village currently.
- **Fodder**
  - **Straw Storage for Livestock**: Some farmers store straw from paddy and wheat crops to use as fodder for their livestock.
  - **Crop Diversity and Biomass Availability**: The village generates substantial biomass, as farmers cultivate a variety of crops including black mustard, paddy, wheat, moong, maize, and in some areas, jowar and barley. These crops are chopped and used as fodder for livestock.
  - **Dedicated Fodder Plots**: Some plots are specifically used for growing fodder crops such as sorghum and maize.
  - **Local Shrubs as Fodder Sources:** Shrubs like Khata and Gular, found near household lands, are used as fodder sources. There is green fodder crops cultivated in the village, such as jowar/barley (used as border grass in main crops), similar to methi, as well as Bakula/Bakoli and Jainera (jowar/sorghum).
  - **Chokar** is purchased from the market and mixed with hay crops to feed goats. Farmers typically provide about half a kilogram of this feed to each goat per day. The cost of Chokar is around ₹30–35 per kilogram. It is mainly used during the months of April, May, and June, but some farmers use it throughout the year.
  - **Lack of Grazing Land:** There are no designated pasture or grazing lands for cattle or goats. Post-harvest, goats are usually taken to orchards or crop fields for grazing. There is no open grazing land for livestock, only farmers graze their livestock openly after harvesting any crops.

- **Scarcity of Fodder During Summer:** Farmers face a shortage of fodder during the summer months and often purchase it from the market to meet the needs of their livestock. Fodder scarcity is observed mainly during the months of November, December, March, April, May, and June.

Month-wise fodder availability is ranked on a scale of 1 to 5, with 1 being the lowest availability and 5 being the highest availability of fodder.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Fodder Availability	III	III	II	I	I	I	IIIII	IIIII	IIIII	IIIII	II	I	I - Lowest Availability IIIII - Highest Availability

MONTHS WISE:

- April, May, June, Dec (I) : Marking (I) is very less green grass. Farmers used to use green feed - Mango leaf, Jamun Leaf, Pipal leaf, Jackfruit leaf.
- July, August, Sept, (IIIII): Green Grass available.

Images: Straw storing unit locally made from bamboo

Image: Fodder plots near homestead land

Image: Local Straw for livestock

Image: Cattle Shelter

- **Goat Rearing Status and Economic Loss Due to Mortality:** Many efforts and interventions are currently being carried out by the H-I team to improve the goat value chain in this village. The program primarily focuses on landless farmers. The majority of farmers rear goats as their main livelihood activity. However, there is a lack of systematic shelter for goats; in many instances, they are kept inside the house, which contributes to their poor overall health condition. Many goats suffer from anemia, which can be attributed to multiple causes—one major factor being the limited availability of green fodder. Some farmers cultivate green fodder crops, such as sorghum mixed with mung beans, on specific plots as part of a mixed farming practice. As of April, farmers are feeding their goats a mixture of Chokra and hay crops. Other Field Observations on Goat Rearing:
  - Average herd Size of Goat Holdings: Each household in the village owns, on average, four goats. ***Refer table no. 3***
  - **Mortality Trends:** Over the past year, it has been observed that approximately one goat (Goat/lamb/buck) per household dies due to various reasons, indicating a recurring mortality issue in goat rearing.

- **Market Value:**
  - A 2–3-month-old lamb is typically sold for ₹1,000–₹2,000.
  - A fully grown buck (10–15 months old) fetches between ₹5,000 and ₹6,000 under normal conditions. During festive seasons, prices can rise significantly, ranging from ₹10,000 to ₹30,000 depending on market demand.

- **Economic Loss Due to Mortality:**
  - Even if a conservative estimate of one goat mortality per household is assumed, the loss per household ranges between ₹2,000 and ₹3,500 since the goat is reared for at least ten to fifteen months before selling.
  - **Goat Mortality Loss Estimate:** Given that nearly 100% of households rear goats, the cumulative annual loss to the village due to goat mortality is **estimated to be between ₹2.5 lakh to ₹4.5 lakh for 130HH.**

- **Health Observations:**
    - Preliminary observations suggest poor goat health is a contributing factor to mortality.
    - Common issues include low body weight and signs of anemia, which indicate the need for better veterinary care, nutrition management, and health monitoring.

Table: Analysis on Goatary status

Sr. No.	Name	Goat	Lamb	Buck	Total	Mortality in Past one year			
						Goat	Lamb	Buck	Total
1.	Indu Devi	2	2	3	7	1	0	2	3
2.	Lakhi Devi	2			2	0	0	0	0
3.	Sunita Devi	1		1	2	0	0	0	0
4.	Sudha	2	2		4	0	0	0	0
5.	Raju Devi	1		1	2	1	1	1	3
6.	Shardha Devi	1	1	4	6	1	0	0	1
7.	Anuradha	1		2	3	0	0	0	0
8.	Kanti Devi	1	1	3	5	0	0	0	0
9.	Asha Devi	1		2	3	0	2	1	3
10.	Sharmila	1			1	0	0	0	0
	Total	**13**	**6**	**16**	**35**	3.00	3.00	4.00	**10.00**
	Average				**3.5**				**1**

SCOPE OF WORK

- **Fodder Availability and Opportunities for Integration:** Currently, the primary sources of fodder for livestock are the dried straw of paddy and wheat, and chokar (bran). During the monsoon and post-monsoon seasons, green fodder becomes available from pulses and other fodder crops. Farmers with bamboo plantations also have access to naturally growing grasses that serve as livestock feed. Additionally, some local tree species around homestead lands are used as supplementary fodder sources. Napier grass is also being promoted by the H-I team in the villages as a high-yielding fodder crop.

  A detailed assessment of the **net fodder deficit** in the village can help identify gaps and opportunities for improvement. There is significant potential to address these gaps by **utilizing farm bunds, diversifying orchard plantations with fodder crops, and integrating fodder crops into existing paddy and wheat cultivation systems.**
- **Fodder Diversification:** Considering the poor health condition of livestock, there is a need to diversify mono-cropped fodder plots—such as those with only maize or sorghum—by intercropping

them with pulses, legumes, and other nutrient-rich fodder crops. This approach can enhance the nutritional value of the fodder, improve soil health, and ensure better availability of green fodder throughout the year.

- **Identification of Local Fodder Trees and Shrubs:** Promoting the plantation of local fodder trees and shrubs on various land types, including near homesteads, can provide a steady and sustainable source of fodder for livestock. During discussions with the community, seven to ten different local fodder tree species and grasses were identified. There is significant scope to further understand these local fodder resources and promote their cultivation on farm bunds, within orchard crops, and around homestead lands.
- **Opportunity for Local Enterprise Development:** There is an opportunity to develop a local enterprise that supplies balanced fodder, feed, and mineral mixtures, providing villagers with regular and reliable access to quality livestock nutrition products.
- **Capacity Building:** Under the current program, the H-I team is training Pashu Sakhis to improve livestock healthcare services within the villages. Further strengthening can be done to build farmers' capacity in shelter maintenance, disease prevention, and overall improvement of animal health.

Theme – 5: Kitchen Garden

Field Observations and issues identified:

Most households in the village cultivate some form of vegetables in their kitchen gardens, demonstrating an active interest in growing their own produce. This was promoted by the H-I team under existing program. However, these kitchen gardens are generally very small—less than one katha per household—and have limited diversity, mainly growing spinach, okra, brinjal, 1-2 leafy greens, and a few other vegetables. Tuber crops are rarely cultivated. Due to the small size and seasonal cropping, many farmers rely on purchasing vegetables, especially in March, April, May and June. During the lean period from March to June, about 80% of the vegetables consumed come from outside sources, mainly the local mandi. Vegetables like jackfruit which is consumed extensively are almost exclusively bought from the market rather than grown locally. Overall, despite most families having kitchen gardens, their limited size and diversity make the village largely dependent on external vegetable supplies during hotter months.

The table indicates the month-wise purchase of vegetables by farmers on a scale from I (lowest purchase) to IIIII (highest purchase)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Vegetable Purchase	II	II	IIII	IIIII	IIIII	IIIII	III	III	III	III	III	III	I - Lowest Purchase IIIII - Highest Purchase

Image: Kitchen Garden near homestead land

- **Circular Economy**

  A participatory approach to learn how the village economy works—focusing on where people spend most of their money and understanding how these expenses can be kept within the village as a whole.

  Information on weekly expenses was collected from 23 households based on categories they identified for their spending. Most of their weekly expenses were on vegetables, pulses, oil, cereals, fruits, and non-vegetarian food. This data was gathered during a field exercise, but if the exercise is repeated season-wise, more refined insights can emerge.

  An important point to note is that the field visit coincided with a local festival. During this period, fruit expenditures were likely higher compared to non-vegetarian food, as people typically avoid non-veg during pooja ceremonies. Nonetheless, this information provides a broad overview of the expenditure patterns of farmers in the village. Following understanding emerge from the discussion

  - After extrapolating the data to the village level, the community spends approximately 12–15 lakh annually on vegetable consumption, 10–11 lakh on pulses, and 8–10 lakh on edible oil.
  - The expenditure on cereals is the least, as people primarily cultivate and consume paddy and wheat. Additionally, they receive a monthly ration of rice and wheat through the Public Distribution System (PDS).
  - The consumption of chicken and mutton is high (even though it was festival time), indicating a potential scope for improving and promoting poultry farming in the village.

The table indicates weekly expenditure made by farmers in purchase of vegetables, pulses, oil, cereals, fruits and non veg.

SL.No	Name	Member	Vegetable	Pulses	oil	cereals	Fruits	Nonveg	Others
1	Lakkhi devi	7	175	280	130		190		430
2	ranju Devi	6	295				500		
3	Indu Devi	7	185	120			100		350
4	Ninta Devi	6	300	120	135		360	400	560
5	Harindar Singh	12	400	270	150	1500	1000		
6	Ram Bihari		170	150	100		810	520	300
7	Lakhan singh		170	120	160		810		250
8	Gayatri Devi	5	90	130	120		165		100
9	Changla Devi	11	310	80					
10	Lakhiya Devi	6	185		130				
11	Sharmila Devi	7	100						
12	Devnati Devi	5	95						
13	Indu Devi	6	135				390		
14	Sharmila Kumari		310						
15	ranju Devi	5	80						
16	Asha Devi	5	275						
17	Anuradha Devi	4	260						
18	Tetri Devi	18	220	200			305		
19	Dulariya Devi	4	150						

SL.No	Name	Member	Vegetable	Pulses	oil	cereals	Fruits	Nonveg	Others
20	Shraddha Devi	4	100						
21	Kanti Devi	9	30						
22	Sheela Devi	15	220						
23	Asha Devi	3	200	100					
		7.25	194	157	132	1500	463	460	332
			1309383	**1061320**	**893286**	**10140000**	**3129880**	**3109600**	**2242067**

SCOPE OF WORK

- A detailed analysis of the village's vegetable requirements and how these can be met internally could help transform the village into a vegetable-surplus area. There is also potential for setting up local enterprises to sell vegetables within the community.
- There is scope to integrate vegetable cultivation into the existing cropping systems and orchard plantations.
- Making vegetable seeds locally available would support sustained cultivation.
- Some farmers still extract mustard oil locally for household consumption. A detailed estimate of market expenditure on edible oil, along with the potential to cultivate oilseeds within the existing cropping system, can help reduce dependency on external markets.
- A similar approach applies to pulses. There is potential for developing local enterprises such as oil extraction units and dal processing mills to strengthen self-reliance.

Image: Oilseeds like mustard are cultivated by farmers and used for extracting oil for household consumption

CONCLUSION

The field visit to Rampur Brahmdas village clearly demonstrated how participatory planning can lead to grounded, community-owned action. Using tools like EPRA and Fasal Chakra, the facilitation team worked closely with farmers and local organizations to co-develop a practical, context-specific action plan. The process placed local knowledge, challenges, and aspirations at the center.

Key issues such as high input costs, inefficient irrigation, poor livestock health, wildlife conflict, and over-reliance on monocropping were identified through collective dialogue. At the same time, promising practices like crop diversification, collective labor systems, and early efforts in natural farming showcased the community's readiness for ecological transition.

This exercise reinforced the importance of blending traditional wisdom with scientific approaches to build sustainable and climate-resilient systems. It also highlighted the need to strengthen institutional linkages, promote locally managed resources, and build rural enterprises that reduce dependence on external markets.

Overall, the Rampur Brahmdas experience effectively demonstrated how participatory planning can shape broader, action-oriented strategies rooted in community needs and local realities. Strategic areas were identified through this process, laying a strong foundation for evolving micro plans in consultation with the target community.

FOR CONTACT DETAILS, PLEASE WRITE TO US

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