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Partnering with pioneers to scale farmer-led adaptation innovations

Implementation guide for practitioners–Ethiopia

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Partnering with pioneers to scale farmer-led adaptation innovations

Implementation guide for practitioners–Ethiopia

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International Livestock Research Institute

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CGIAR SUSTAINABLE ANIMAL AND AQUATIC FOODS
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1 Introduction

Pioneer positive deviance (P-PD) is an approach developed by a team at ILRI to address issues of adaptation to climate change. It is an evolution of the original concept of positive deviance originating in public health research. It focuses on identifying and learning from individuals, groups, or households who find unique, successful solutions to common challenges despite having no additional resources or advantages. In P-PD, "pioneer farmers" and "pioneer herders" refer to men, women, and youth alike — it is fully inclusive, and never shorthand for "male farmer".

By studying these "positive deviants", communities can discover locally effective practices that can be adopted and scaled, making solutions more sustainable and tailored to specific needs.

Positive deviance has been used in areas like public health, education, and social change to solve complex problems from within the community.

2 Pioneers and the positive deviance approach

Smallholder pioneer farmers across Ethiopia are already responding to climate variability, often in ways that remain invisible to formal extension and development systems. These farmers develop locally grounded solutions to shared challenges such as feed scarcity, changing rainfall patterns, and rising production risks.

The positive deviance (PD) approach builds on a simple but powerful premise: within any community facing similar constraints, some individuals consistently achieve better outcomes using locally available resources. Rather than introducing external solutions, PD starts by identifying, understanding, and amplifying these existing practices.

We call these positive deviant farmers "pioneers".

This approach is closely aligned with long-standing participatory traditions but differs in one key respect: it does not begin with external problem definitions or technologies, but with observable success within the system.

Drawing on implementation experience from the International Livestock Research Institute (ILRI) in Ethiopia, **this guide translates the pioneer approach, called pioneer-positive deviance (P-PD) approach, into a practical, field-level methodology for:**

- government extension services
- NGOs and development programs
- private advisory and service providers

It is particularly suited to Ethiopia's pluralistic extension system, where multiple actors operate in parallel and coordination and knowledge integration is often challenging. By grounding learning processes in farmer-led innovation and shared evidence, **the approach creates a common entry point for collaboration and learning across actors.**



2.1 Purpose of this guide

This is a simplified, modular implementation guide designed to:

- identify and strengthen locally developed adaptation practices
- enable farmer-led learning and validation
- support peer-to-peer scaling
- build multi-actor knowledge networks
- contribute to both scaling out (scaling of practices) and scaling in (systems change)

2.2 How to use this guide

This guide is organized as a step-by-step learning journey that shows how locally developed adaptation practices can be identified, validated, strengthened, and shared to benefit other farmers and the wider agricultural system (Figure 1). Each section builds upon the previous one, using the experiences of an extension worker and farmers to illustrate the process in practice. The guide follows six connected stages:

1. Identify pioneers and promising practices by engaging communities to recognize farmers who are achieving better results under similar conditions.

2. Investigate and verify pioneer practices through farm visits to understand what makes these practices effective, feasible, and relevant for wider use.

3. Generate farmer-led evidence using simple citizen science approaches that enable farmers to document, monitor, and evaluate the performance of their own practices.

4. Promote peer-to-peer learning through farmer-led field days and demonstrations where pioneers share their experiences directly with other farmers.

5. Build multi-actor knowledge networks by connecting farmers with extension services, researchers, financial institutions, NGOs, and other partners to support adaptation and innovation.

6. Scale successful practices and strengthen learning systems by combining the spread of proven farmer innovations (scaling out) with improvements in the institutions and partnerships that support continuous learning and adaptation (scaling in).

Figure 1. Overview of the pioneer adaptation approach.

Part A

Diagram 1: Overall adaptation pioneer/positive deviance process

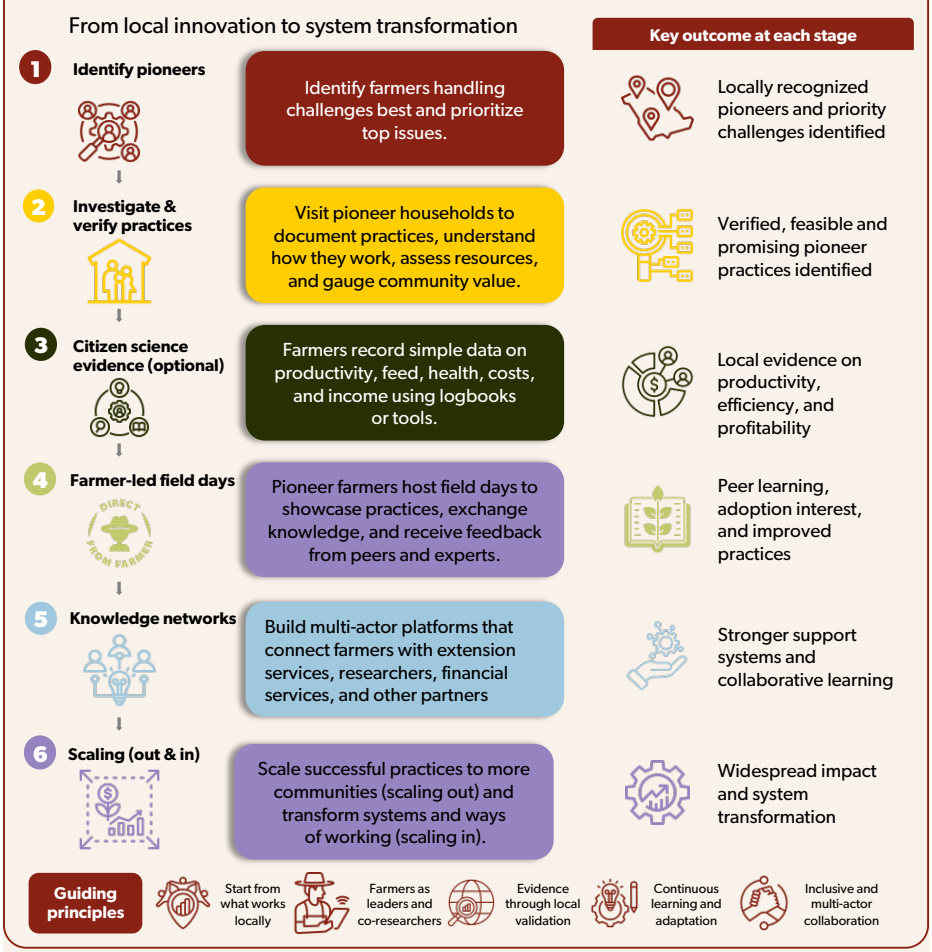


Diagram 2: Modular implementation pathways



Step 1 and step 2 are essential foundations.
Step 3 is optional. From there, multiple pathways are possible.

1 **Identify pioneers**

2 **Investigate & verify practices**

Essential foundation
Builds the basis for all pathways.

Pathway A
Minimum viable scaling

5 Knowledge networks

6 Scaling (out & in)

For rapid connection to systems and scaling when resources or time are limited.

Pathway B
With evidence generation

3 Citizen science evidence (optional)

5 Knowledge networks

Adds credibility and strengthens decision-making and learning.

Pathway C
Full learning cycle

3 Citizen science evidence (optional)

4 Farmer-led field days

5 Knowledge networks

6 Scaling (out & in)

Comprehensive pathway for strong evidence, peer learning and system change.

Pathway D
Demonstration-focused

4 Farmer-led field days

5 Knowledge networks

Ideal when peer learning is the main priority and evidence is available.

What each pathway achieves

Builds on local success · Strengthens evidence · Enhances collaboration · Promotes adoption · Drives impact at scale

Flexibility is key: choose the pathway that fits your context, resources and goals

3 Identifying pioneers and existing adaptation practices

In a "woreda" (district) in the Ethiopian highlands, an extension expert, Samuel, grew frustrated with the slow uptake of externally promoted feed and forage innovations. Rather than continuing to "push" solutions, he decided to reverse the approach: start from what farmers were already doing successfully. Samuel spoke to the development agents under his supervision and asked them if he could go to the upcoming meetings in Gebere Village. Instead of introducing new technologies as usual, he asked a simple but powerful question:

This question served two purposes:



"Are there any farmers here managing the main challenges in feeding livestock with better than expected outcomes, while they have similar constraints like others?"

How are they doing it?"

1. It helped farmers prioritize their most pressing feed and forage challenges (e.g., feed shortages, high cost of market-sourced supplements and products like Frushka, low productivity).

2. It surfaced locally existing solutions that were already being tested and adapted under real conditions, and thus more easily adoptable by others.

Through facilitated discussions, farmers began identifying and characterizing peers who were:

- maintaining production during feed-scarce periods
- using unconventional but locally available feed resources
- organizing feed access or storage differently

These individuals represented pioneer farmers who, despite facing similar constraints, had developed more effective practices.

Rather than evaluating solutions at this stage, Samuel discussed this with the development agents. Then he advised them to focus on:

- mapping who is doing something different
- identifying key qualities and characteristics that define these individuals
- understanding which challenges these practices address
- noting community recognition of success (peer validation)
- identifying the potential for sharing knowledge with others

This process generated a locally grounded shortlist of promising adaptation practices, forming the basis for deeper investigation in the next step.

Building on these discussions, farmers shared a consistent concern: the changes in the onset, duration, and reliability of rain. They explained that

these shifts, along with increasing climate variability such as frost events and irregular seasonal patterns, have created a critical bottleneck in livestock production. In addition, declining crop productivity, shrinking landholdings, and rising input costs are further constraining the ability to sustain both crop and livestock systems. However, farmers also pointed out that not everyone was equally affected. Through community discussions, they identified a small number of farmers who had begun to address this challenge more successfully. These individuals and families had:

- recognized the rainy season as the key risk management period and were using it strategically to prepare for future feed shortages
- experimented with feed preservation and storage strategies, including hay making, crop residue collection, and preparation of locally adapted feed mixtures such as winnowing residue (locally known as "girda gird")
- diversified and improved feed resources, combining local/home/farm available ingredients (e.g., crop residues, by-products, fodder crops such as oat–vetch, and tree lucerne) and processing them into more nutritious and storable forms
- adopted controlled feeding and zero-grazing practices, reducing reliance on increasingly scarce grazing land and ensuring more consistent feeding throughout the year
- engaged in sheep fattening as a strategy to buffer climate and crop-related risks while generating income
- maintained better animal condition and achieved better fattening results during feed-scarce months

These examples reflected emerging pioneer practices: locally developed responses to shared and intensifying constraints.

Samuel had clarified both the priority challenge (feed scarcity) and the existence of promising local solutions. He discussed this with

the development agents and then decided to move to the next step: systematically investigating these practices in depth, understanding how they work and evolve, and assessing their potential for wider adaptation.

Through discussions with farmers and other development agents, Samuel identified promising practices for adoption, such as crop residue preparation, hay making, tree lucerne management, and homemade concentrate preparation for fattening sheep, all of which had been successfully demonstrated by pioneer farmers. In particular, he found that homemade concentrate preparation for fattening sheep was a local practice carried out by only a few households in the village and had potential for wider adoption.

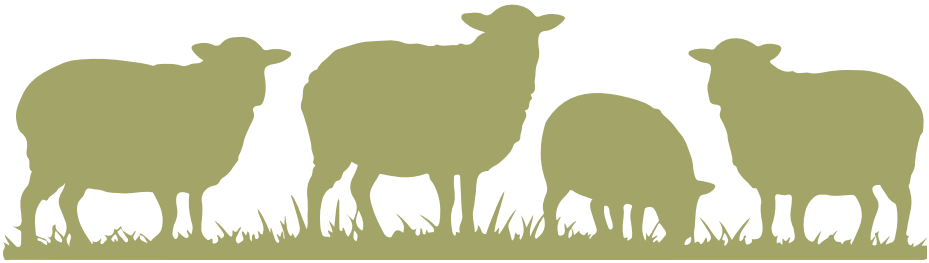


4 Investigating and verifying pioneer practices

After the initial meetings in Gebere Village, Samuel took time to reflect on what he had learned. Farmers had clearly identified feed scarcity as their most pressing challenge and pointed to a few individuals who seemed to be managing it more successfully.

To better understand these emerging solutions as well as what specific behaviors and qualities enable successful farmers to succeed, Samuel set out to ask the development agents to visit the identified farming families and examine their practices and context in detail **to identify "uncommon yet successful" practices.**

His initial visits included the households of Solomon and Worke, as well as Meseret, smallholder households managing a mixed system with dairy cows and sheep, alongside a small homestead garden. From the moment he arrived, it was clear why other farmers had mentioned them.



Meseret



Meseret, a widow heading a household, demonstrated to Samuel how to prepare a homemade feed concentrate using locally available ingredients in a simple, practical way. She explained that she had been using this method for years to fatten sheep for major holidays and consistently getting good market prices. This homemade feed had helped her replace purchased feed concentrate, was affordable and nutritious, and helped improve animal productivity and health.

She showed Samuel the main ingredients for the concentrate, such as broken and immature faba beans, clover, tree lucerne seeds, and grains, and how she ground and mixed them. She then added salt and water to make kita (a thin, unleavened flatbread), sliced it into small pieces, and combined it with crop residues and hay before feeding it to her sheep. Meseret also explained an alternative method where the mixture is soaked overnight before feeding to make it more palatable. She emphasized to Samuel the importance of proper balance and careful preparation to maintain the feed's quality and effectiveness.

Solomon and Worke



During the second farm visit to the home of Solomon and Worke, Samuel observed a production system centered on dairy cows and sheep fattening. The animals were kept under a zero-grazing system, protecting them from harsh weather conditions. The couple explained that they bought sheep with low body condition, dewormed them and then provided good feed for fattening. Samuel also found out that they diversified their income by selling butter, cheese, milk, and other livestock products.

Solomon and Worke then showed Samuel how to prepare feed for newly delivered sheep using "frushka", broken and immature grains that they ground and mixed with water before feeding the animals. They also demonstrated hay making and explained how to prevent feed wastage and improve feed quality. During the hay preparation, they explained that it is good to harvest the grass before reaching the flowering stage and before it loses its moisture to maintain better feed quality. They also explained that mixing a larger quantity of leaves with a smaller quantity of stems helps make the feed richer in nutrients. Finally, the couple added that drying the grass for two to three days is enough before storing it in a place free from moisture and rodents.

Rather than taking these claims at face value, Samuel focused on:

- observing what was done differently in practice
- asking how these practices had evolved over time
- understanding the labor, knowledge, and resource requirements
- exploring whether the practices were feasible for other farmers under typical local conditions
- finding out if the family was willing to document and share their practices with others

At the end of the visit, Samuel asked an important follow-up question:



"Are there any other farmers who are particularly successful in addressing feed shortages?"

Meseret immediately pointed him to Ragassa and Fanta, whom she described as pioneers in making home-based feed supplements, with long-standing experience and a reputation for sharing knowledge with others. This marked an important shift: rather than relying on a fixed sample, Samuel began to trace networks of locally recognized expertise, allowing pioneer practices to emerge organically through both peer validation and referral.

Doyogena, Ethiopia



4.1 Checklist: Pioneer feed and forage practices

A. Case identification

☐ Farmer identified through community nomination ☐ Referred by: _____ ☐ Repeat nomination (≥2 independent mentions)

Ask (end of visit):
☐ Who else is successfully managing dry-season feed shortages?

Names mentioned:

1. _____ 2. _____ 3. _____

B. Farmer and farm profile

☐ Farmer name/code: _____
☐ Kebele: _____
☐ Village: _____
☐ Farm size: _____ (units: _____)
☐ No. fattening sheep: _____
☐ Other livestock: _____
☐ Crop-livestock system: ☐ Yes ☐ No

C. Key feed challenges (farmer perception)

☐ Main feed constraint identified
☐ Worst feeding period: _____
☐ Climate-related change reported (dry season length/intensity)
☐ Impact observed:
☐ Lower body condition ☐ Animal deaths
☐ Animal weight loss ☐ Higher feed costs

Notes: _____

D. Observed adaptation practices (tick all that apply)

Feed production

☐ Homestead fodder production
☐ Cultivation of improved fodder crops (oats and vetch, Napier grass)
☐ Tree fodder planting (e.g., shrubs/leguminous trees, tree lucerne)
☐ Crop residue use

Feed conservation

☐ Cut and carry system
☐ Haymaking
☐ Crop residue storage
☐ Dry-season feed conservation / seasonal feed stockpiling

Feed management

☐ Zero grazing
☐ Rotational grazing
☐ Feeding prioritization (e.g. young animals, lactating cows)
☐ Feed rationing strategy
☐ Purchased feed supplementation (Frushka, fagulo, molases)
☐ Preparation of homemade feed concentration

E. Practice details (key innovation)

☐ Step-by-step explanation obtained ☐ Origin: ☐ Self-developed ☐ Learned from others ☐ Extension/project input
☐ When practice started: _____

☐ Inputs required: ☐ Land ☐ Labor ☐ Cash inputs ☐ External materials

Notes (brief description of practice): _____

F. Outcomes (farmer-reported + observed)

☐ Fatten animals
☐ Improved dry-season feed availability
☐ Improved animal body condition
☐ Reduced feed costs
☐ Reduced livestock mortality/mobility

Enumerator observation:

- Livestock body condition: ☐ Good ☐ Moderate ☐ Poor
- Feed availability visible: ☐ Yes ☐ No

G. Diffusion / social learning

☐ Farmer shares knowledge with others
☐ Farmer has been copied by others
☐ Farmer named as "good practice source"
☐ Other farmers mentioned by respondent:
1. _____
2. _____

H. Visual documentation

☐ Farm layout photo
☐ Feed production area
☐ Feed storage system (crop residue/hay)
☐ Fodder crops / trees

Enumerator summary (1–2 lines)

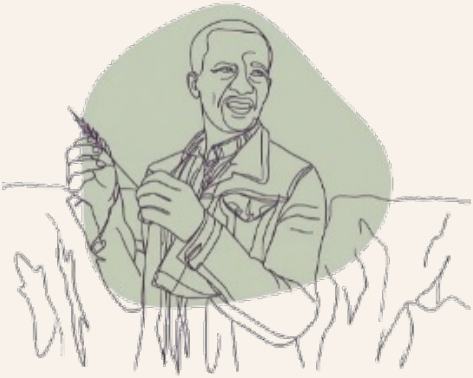
What makes this farmer different from others?

_____

_____

4.1.1 Farmer-led validation through citizen science evidence collection

While the initial work with pioneer families strongly impressed Samuel, his supervisor remained unconvinced. The key question was consistent:



"How can you demonstrate that these farmers are actually better?"

Community narratives were not sufficient. The expectation was clear: credible, quantitative evidence of impact.

However, Samuel also knew that a large-scale household survey was not feasible due to limited resources and funding constraints. This led him to rethink the approach.

Drawing on ideas he had encountered from participatory research with pioneer farmers, he decided to use a citizen science approach, where farmers themselves would participate in generating structured evidence on their practices.

5 Design of the citizen science approach

Samuel focused on a group of identified pioneer families and worked closely with them to establish a simple citizen science–based documentation and monitoring system. Rather than relying on external researchers alone, farmers themselves participated in documenting and tracking the performance of their adaptation practices over time as a household. To support this process, Samuel and the development agents provided simple recording tools and practical guidance that farmers could easily incorporate into their daily routines.

Together, they agreed to document key aspects of the farming system, including:

- animal productivity (daily or weekly milk output, weekly or biweekly sheep weight measurement during fattening)
- feed management practices (types of feed given to the animal, quantities, timing and seasonal availability, and feed preservation methods)
- livestock health indicators (e.g. animal body condition, animal body weight, disease occurrence, and mortality events)
- costs of production (feed purchases, labor requirement, veterinary inputs, and other management costs)
- farm income streams (animal sale, milk, butter, cheese, and other livestock related products)

The purpose of this citizen science process was not only to generate evidence, but also to help farmers better understand the performance of their practices and support adaptive learning across households. Over time, the collected information helped Samuel and the pioneer families compare practices and assess their contribution to:

- productivity improvements (e.g. milk yield, animal growth, and fattening performance)
- efficiency (better use of locally available feed resources and reduced dependence on purchased inputs)
- profitability (income–cost balance) and resilience (improved income, lower production costs, and better ability to cope with feed shortages and climate variability)

This process also strengthened the pioneer families' ownership of the learning process, enabled them to manage their innovation processes, and created locally generated evidence that could later be shared with extension services, neighboring farming households, and other development actors.

5.1 Farmer engagement and learning process

At first, the pioneer farmers were hesitant. The idea of systematically recording and analyzing their activities felt unfamiliar and potentially burdensome. However, Samuel clarified that:



- it was modified to be usable regardless of literacy levels
- the data would be analyzed jointly with them
- the results would be used directly to improve their own decision-making

- Interest increased significantly.
- Farmers began to see the process not as external monitoring, but as a tool for self-evaluation, learning, and decision-making.

5.2 Emerging outcomes of the citizen science process

As the citizen science process continued, both Samuel and the participating pioneer families observed several important outcomes emerging from the jointly collected evidence. What started as a simple documentation exercise gradually evolved into a broader learning and decision-support process for farmers, development agents, and extension actors. Over time, several key outcomes became apparent:

5.2.1 Evidence of improved performance

By regularly documenting production and feeding practices, pioneer farmers began to observe clearer patterns linking specific feed management strategies to livestock performance. For example, households that prepared and stored feed during the rainy and harvesting season were often able to maintain more stable milk yields and better sheep body weight during dry periods.

The records also showed that reducing seasonal feed shortages contributed to:

- more consistent milk production
- improved animal body condition
- better sheep fattening performance
- reduced livestock stress during dry periods

This helped farmers move beyond assumptions and discuss adaptation practices using locally generated evidence.

5.2.2 Improved awareness of production costs

The process also increased pioneer farmers' understanding of production costs and resource use. By documenting expenditures on feed, labor, and purchased inputs, several households realized that some locally developed feed strategies reduced dependence on expensive commercial feed. Farmers observed that:

- using locally available feed resources reduced costs
- feed conservation practices helped reduce emergency feed purchases during dry seasons
- homemade feed mixtures could provide affordable alternatives to purchased concentrates

This improved farmers' ability to compare practices not only in terms of productivity, but also in terms of economic efficiency and profitability.

5.2.3 System-level learning across households

As pioneers began sharing and comparing records, differences in management practices and outcomes became more visible and easier to discuss collectively. This created opportunities for joint reflection and learning across households. For example, farmers started discussing:

- why some households had feed longer than others
- which feeding practices produced better fattening results
- how labor availability influenced the adoption of certain practices
- which practices appeared most feasible under local resource constraints

The citizen science process therefore became more than a data collection activity; it evolved into a locally grounded learning platform that supported experimentation, reflection, and adaptation.

5.2.4 Strengthened peer communication

The documented results also strengthened farmers' confidence in sharing their practices with others. Pioneer farmers increasingly used their own records and observations to explain and demonstrate practices during farmer visits, informal discussions, and learning exchanges.

Because the evidence was generated locally and based on real farming conditions, neighboring farmers found the results more credible, practical, and relatable than externally promoted recommendations alone. This contributed to:

- increased confidence and empowerment among pioneer farmers
- greater recognition of local knowledge and farmer innovation
- stronger farmer-to-farmer learning and trust
- peer validation of promising adaptation practices
- increased awareness among pioneer farmers that their practices were effective and worth sharing
- growing interest from neighboring households, development agents, and extension actors
- wider discussion on locally adapted feed and livestock management practices

Over time, the citizen science process not only validated pioneer practices, but also strengthened local ownership and leadership and created a stronger foundation for peer-led scaling, collective learning, and community-based adaptation processes.

5.2.5 Broader impact

The citizen science approach transformed the process from external validation to farmer-owned evidence generation. It also created a foundation for:

- empowering communities and strengthening self-reliance
- developing practice briefs and dissemination leaflets
- supporting peer-to-peer scaling
- strengthening the legitimacy of locally developed
- adaptation strategies



5.3 Farmer citizen science logbook: feed, growth, and fattening performance

Farmer Name/Code: _____ Farm ID: _____
Village: _____ Start Date: _____

A. Sheep growth and body condition monitoring form

Date	Sheep ear tag	Weight (Kg)	Body condition score (1-5)	Notes (e.g. feed change, illness)

B. Feed use record

Date/ Week	Main feed types used (tick/list)	Own-grown feed		Purchased feed		Other sources (e.g. grazing, residues)	Notes
		Yes	No	Yes	No		
	Pasture/grazing						
	Fodder crops- oats						
	Homemade feed concentrate						
	Hay						
	Crop residues						
	Factory by product						
	Fodder trees						
	Frushka/fagulo						

C. Feed availability

Date/ Week	Feed availability status			Dry season pressure observed?		Animal condition (good/medium/poor)			Notes
	Sufficient	Limited	Scarce	Yes	No	Good	Medium	Poor	

D. Livestock health and survival

Date/ Week	Sick animals (number)	Deaths (number)	Body condition change			Notes (cause if known)
			Improved	Same	Worse	

E. Feed costs and farm expenditure

Date/ Week	Purchased feed costs	Other livestock costs (vet, labor, transport)	Total cost estimate	Notes

F. Income from sheep fattening

Date/ Week	Animals sold/ sheep sales income	Other livestock income (e.g. milk, butter, cheese)	Total income	Notes

G. Key changes or innovations (farmer reflection) / Each week/month, answer briefly:

Did you change anything in how you feed your animals? What has changed and how?	What worked well this period?	What challenges did you face?

H. Seasonal Summary (End of Month / Season)

Best feeding strategy this period	Worst constraint experienced	Main improvement noticed (weight gain, milk, cost, health)	Would you repeat this strategy?		
			Yes	No	Maybe

Enumerator / Facilitator Notes (optional)
Please record any relevant contextual information, observations, or circumstances that may help interpret the responses, including unusual situations, respondent engagement, environmental factors, or any concerns about the data.

Notes / Observations _____

6 Farmer-led demonstration and peer-to-peer scaling through field days

Samuel was struck by how engaged the pioneer farmers became once they saw their own data from the citizen science process. The findings were no longer just "action research results", but shared evidence of what was working on their own farms.

Together, Samuel and the pioneer families translated these insights into simple, practical knowledge products, summarizing key feed strategies, costs, and observed productivity outcomes in accessible language. However, one pioneer farmer proposed a more powerful idea:



"Why not show other farmers what we are doing directly on our farms?"

This idea marked a shift from documentation to live demonstration-based and experiential learning, facilitating social influencing and spontaneous dissemination.

6.1 Design of farmer-led field days

Despite limited resources, the group organized a series of farmer-led field days on volunteer pioneer farms. Each event hosted approximately 50 farmers from surrounding villages. Participants were selected locally by pioneers with a focus on livestock keepers, while generally avoiding political representatives. The pioneers hosted the event and shaped the program around their farms and practices.

The field days were not one-off events but part of a continuous learning process. They were held over time across different volunteer pioneer farms, allowing farmers to observe diverse practices and contexts.

The design was deliberately inclusive: entire households participated, including husbands, wives, and youth. The aim was to ensure livestock farming was understood as a family-based livelihood system, not a male-dominated or outdated activity.

Each field day combined:

- on-farm demonstrations of feed production, preservation, and feeding strategies
- peer explanation, led by the pioneer farmers themselves
- distribution of simple learning pamphlets for later reference

6.2 Interactive learning and feedback

The field days were intentionally structured as learning exchanges rather than training sessions or community meetings. Key features included:

- farmers asking the hosts questions directly

- peer feedback on feasibility and adaptation
- open discussion on constraints and possible improvements

Importantly, pioneer farmers also received constructive critique from visiting farmers, which helped refine and adapt their practices further.

6.3 Multi-actor engagement

To strengthen support for scaling, Samuel and the pioneer farmers selectively invited additional actors, including:

- financial institutions (for credit and group financing)
- livestock health and genetics experts
- forestry and feed specialists
- extension officers and researchers

External actors were not invited to every event; their participation was demand-driven, based on farmers' and pioneers' requests for additional support and linkages with relevant stakeholders. However, the guiding principle remained clear:

These were learning events, not top-down training sessions. Knowledge flowed in multiple directions, and external actors were positioned as contributors to dialogue rather than instructors.

After each field day, Samuel systematically collected feedback from both host and participating farmers to understand what they had learned, their reflections on the experience, and the challenges and opportunities they identified. This reflective process captured immediate learning outcomes and provided critical insights for planning next steps toward sustained and wider impact.

6.4 Outcomes of the field days

The field days generated several immediate and longer-term outcomes:

1. Rapid diffusion of interest
    - Attendance exceeded expectations.
    - Additional farmers requested inclusion in future events.
2. Strengthened peer learning networks
    - Farmers formed ongoing connections beyond the events.
    - Informal exchange of practices continued.
3. Increased legitimacy of practices
    - Seeing practices directly on farms increased trust and adoption potential.
4. Enhanced system awareness
    - Farmers began to see livestock farming as a more profitable and innovation-driven enterprise.

6.5 Reflections and learning

For Samuel and his colleagues, the field days represented a rare achievement: a large-scale, high-energy learning platform that was farmer-led, evidence-informed, and socially embedded.

Rather than a one-off intervention, the process had begun to evolve into a self-sustaining system of peer-to-peer adaptation and innovation diffusion.



7 From field days to knowledge networks

From the field days, Samuel learned a critical lesson:

Farmer-to-farmer learning was necessary but not sufficient for sustained and wider impact.

While peer demonstration significantly improved trust and adoption, longer-term scaling required broader knowledge networks and institutional engagement.

Samuel observed that impact increased substantially when farmers were not only learning from peers but also engaging directly with actors who typically remained distant from day-to-day farming realities.

This led to the deliberate creation of multi-actor knowledge networks, bringing together:

- government extension officers
- financial institutions and credit providers
- NGOs and development partners
- researchers and technical experts
- input suppliers and service providers

These actors rarely interacted meaningfully with farmers in conventional systems. Field days revealed that many were disconnected from practical realities, while also feeling limited in their ability to contribute effectively.

By bringing them together in structured dialogue spaces, Samuel helped establish a more interactive system resembling a living lab, where:

- farmers shared real-world constraints and innovations
- external actors contributed technical and institutional perspectives
- joint discussions explored adaptation, experimentation, and feasibility
- on-farm trials and iterative learning became possible

This shifted engagement from one-way extension delivery to co-exploration of solutions.

8 Rethinking the role of extension

These experiences prompted Samuel to reflect critically on traditional extension systems. He began advocating for a different role for extension services:

- from technology transfer agents ⇢ facilitators of learning networks
- from top-down instruction ⇢ participatory experimentation
- from project-based outreach ⇢ continuous engagement platforms

Samuel encouraged supervisors and colleagues to recognize that extension could be more effective when embedded in knowledge ecosystems rather than linear dissemination models, and also consider the pluralistic extension model for this purpose. He also recognized the need for a shift in how agricultural support systems function:

- from expert-driven solutions ⇢ farmer-led discovery processes
- from external validation ⇢ locally generated evidence
- from fragmented projects ⇢ continuous learning systems

In essence, it was about institutionalizing a positive deviance way of working with pioneers.

8.1 Core insight

Samuel concluded that sustainable impact depended on two parallel scaling pathways:



- scaling out: spreading successful farmer innovations
- scaling in: transforming the systems that enable, recognize, and support those innovations

Only when both occur together can locally generated adaptation practices move from isolated success stories to systemic change in agricultural development practice.

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