



## SUCCESS STORY

### From Five Goats to a Climate-Resilient Farm: A Tribal Farmer's Five-Year Transformation in Assam

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Received: 31 July 2026

Revised: 03 August 2026

Accepted: 04 August 2026

Published online: 07 August 2026

Article ID: SR01141

Citation: Singh, N. M., Chakraborty, A., Medhi, K., & Saikia, R. (2026). From Five Goats to a Climate-Resilient Farm: A Tribal Farmer's Five-Year Transformation in Assam. *Scientia Review*, 2(8), 16-18

#### Background

Krishi Vigyan Kendra (KVK) Dima Hasao, is operating by Keshav Smarak Nyas under the aegis of the Indian Council of Agricultural Research (ICAR) through the Agricultural Technology Application Research Institute (ATARI) Zone VI, Guwahati, works with tribal farming communities across the hill districts of Assam. The centre's long-term objective is to build sustainable, livestock-based livelihoods through scientific interventions in breeding, nutrition, housing, preventive healthcare, fodder production and integrated farming systems. Rather than relying on one-time training camps, KVK employs continuous technical backstopping, regular field visits, Front Line Demonstrations (FLDs) and participatory extension to secure lasting technology adoption and measurable improvement in farmer livelihoods.

#### Situation

Mr. Debojit Phonglo, a tribal farmer from Washaikong village under Diyungbra Development Block of Dima Hasao district, owned 3.34 hectares (approximately 25 bigha) of agricultural land. Before KVK's engagement, only a fraction of this land was productive; the rest lay under-exploited due to limited technical knowledge, weak livestock management skills and absence of enterprise planning. Household income was precarious and seasonal. In 2020, during the COVID-19 pandemic, Mr. Phonglo started goat rearing with just five Assam Hill goats (one breeding buck and four does). Goat farming is a natural fit for the rugged hill terrain of Northeast India, requiring low capital and yielding regular cash flow. Yet traditional systems in the region suffer from uncontrolled breeding, poor-quality feeding, inadequate housing, seasonal fodder scarcity, irregular vaccination and limited veterinary access. He faced all of these constraints. The pandemic compounded them: veterinary services, farm inputs and market access were disrupted just as his enterprise was taking root. Rising feed costs and seasonal fodder shortages threatened to wipe out his investment. He needed more than a training manual, he needed sustained, on-farm mentoring and a diversified plan to survive shocks.

#### Response/Initiative

KVK Dima Hasao selected Mr. Phonglo's holding for a multi-year, case-based intervention rather than a single training event. The initiative unfolded across five years with the following strategy and timeline:

##### Year 1 (2020–2021): Foundation and Stabilization

- Breed selection and controlled mating protocols for the Assam Hill goat.
- Ration balancing using locally available feed resources (tree fodder, crop residues, agricultural by-products).
- Construction of a raised, ventilated shed suited to the humid hill climate.
- Drinking water hygiene practices.
- Establishment of a preventive health calendar covering vaccination (PPR, ET) and strategic deworming.
- A Front Line Demonstration (FLD) on low-input Assam Hill Goat management was conducted on his farm.
- Inputs: KVK technical veterinarian, FLD materials (medicines, mineral mixture, dewormers), and monthly farm visits.

- Outputs: Trained farmer, demonstrated management package, functional shed, feeding system and health protocols.

#### **Year 2–3 (2021–2023): Scaling and Diversification**

- As the goat unit stabilized and began generating income, KVK encouraged enterprise diversification to reduce single-source risk.
- Mr. Phonglo added indigenous cattle (1 bull, 4 cows), backyard poultry (12 cocks, 68 hens), and expanded into horticulture: banana, sugarcane, and a young oil palm plantation.
- Perennial Napier grass was established as a year-round fodder bank.
- Inputs: Continuous advisory support, germplasm linkages, seed and sapling sourcing assistance, quarterly monitoring visits.
- Outputs: Diversified farm enterprises, integrated nutrient cycling (manure → fodder/crops), reduced external input dependence.

#### **Year 4–5 (2023–2025): Consolidation and Demonstration**

- The farm matured into a working Integrated Farming System (IFS) model.
- KVK organized exposure visits for neighbouring farmers, rural youth and trainees to observe scientific goat management, fodder cultivation and enterprise integration under real field conditions.
- Outputs: Live demonstration site, peer-to-peer learning hub, adoption of improved practices by neighbouring households.

#### **Challenges**

The intervention faced predictable hill-farming hurdles. First, the COVID-19 lock-downs in 2020–2021 restricted physical access; KVK staff switched to phone-based advisory and doorstep delivery of critical inputs (medicines, mineral mixture) to keep the health calendar on track. Second, seasonal fodder scarcity during the dry months threatened goat productivity; KVK countered this by establishing a perennial Napier grass bank and training the farmer on silage and hay preparation from crop residues. Third, local market disruptions during the pandemic made selling kids difficult; the team linked Mr. Phonglo with alternative buyers and encouraged staggered kidding to align supply with demand cycles. Finally, convincing a traditionally managed farmer to adopt

controlled breeding and preventive healthcare required repeated, hands-on demonstration rather than classroom lectures, a challenge met through monthly field visits and visible productivity gains.

#### **Result/Impact**

The sustained KVK intervention transformed a vulnerable, five-goat backyard unit into a diversified, climate-resilient Integrated Farming System spanning 3.34 ha. By 2025, the farm held approximately 60 Assam Hill goats (5 breeding bucks and 55 does), 5 indigenous cattle, around 80 desi poultry birds, and commercial plots of Napier grass, sugarcane, banana and a developing oil palm plantation.

#### **Productivity and Income Gains**

Scientific management sharply improved herd productivity, animal health and feed security. Perennial Napier grass now guarantees year-round green fodder, while integrated manure recycling supports fodder plots and plantation crops. Crop residues are fed back to livestock, cutting purchased input costs and lifting overall production efficiency. Diversification across livestock and crop enterprises has reduced economic vulnerability to disease outbreaks, crop failure and price volatility. The integrated farming system currently generates an estimated annual gross income of ₹4.8 lakh and a net income of ₹3.8 lakh from its established enterprises. Goat farming is the principal income driver, contributing approximately ₹3.0 lakh gross and ₹2.8 lakh net annually, followed by sugarcane (₹1.5 lakh gross; ₹0.8 lakh net) and banana (₹0.3 lakh gross; ₹0.2 lakh net). With indigenous cattle, backyard poultry, and oil palm still in the establishment phase, the system has considerable potential for further income growth, demonstrating its strong economic viability and capacity to improve long term household livelihood security.

#### **Social and Ecological Impact**

Beyond income, the model strengthened ecological sustainability through closed-loop resource recycling, reduced chemical input dependence, and greater resilience to climatic and market uncertainty. The diversified system provides year-round on-farm employment and steadier cash flow. Crucially, the farm has become a community learning centre: farmers, rural youth, trainees and extension personnel regularly visit to observe scientific goat management, fodder cultivation and integrated nutrient management under authentic hill-farming conditions. Because the model relies on locally adapted breeds, affordable technologies and on-farm resource cycling, neighbouring

farmers have already begun adopting improved breeding, feeding, housing and healthcare practices.

### Recognition

In recognition of his achievements, Mr. DebojitPhonglo received the Best Goatery Farmer Award at the Livestock and Poultry Show 2025, organized by the Animal Husbandry and Veterinary Department, Government of Assam, from 10-12<sup>th</sup> January 2025 at playground, Khanapara, Guwahati. KVK Dima Hasao also honoured him with the Best Progressive Farmer Award at the Mega Tribal Farmers' Conclave 2025.

**Table 1:** Farm transformation before and after KVK intervention

| Indicator           | Before Intervention (2020)   | Present Status (2025)                  |
|---------------------|------------------------------|----------------------------------------|
| Land utilization    | Partial, unplanned           | Integrated use of 3.34 ha (25 bigha)   |
| Goat population     | 5 (1 buck + 4 does)          | 60 (5 bucks + 55 does)                 |
| Indigenous cattle   | Nil                          | 5 (1 bull + 4 cows)                    |
| Indigenous poultry  | Nil                          | 80 (12 cocks + 68 hens)                |
| Fodder production   | None                         | Perennial Napier grass established     |
| Sugarcane           | Not cultivated               | Commercial cultivation                 |
| Banana              | Limited, subsistence         | Commercial cultivation                 |
| Oil palm            | Not established              | Young plantation                       |
| Livelihood strategy | Single enterprise, high risk | Diversified Integrated Farming System  |
| Technical support   | Traditional, sporadic        | Continuous scientific mentoring by KVK |

**Table 2:** Enterprise-wise annual income from the Integrated Farming System

| Enterprises           | Assam Hill Goat | Sugarcane  | Banana     | Indigenous Cattle | Indigenous Poultry | Oil Palm            |
|-----------------------|-----------------|------------|------------|-------------------|--------------------|---------------------|
| Gross Income (₹/year) | 3,00,000        | 1,50,000   | 30,000     | Under development | Under development  | Under development   |
| Net Income (₹/year)   | 2,80,000        | 80,000     | 20,000     | Under development | Under development  | Under development   |
| Status                | Commercial      | Commercial | Commercial | Growth stage      | Growth stage       | Establishment stage |

### Future Potential

KVK Dima Hasao will continue technical backstopping to deepen the IFS impact. Planned next steps include: (i) genetic improvement of the Assam Hill goat flock through selective breeding and buck replacement; (ii) expansion of scientific fodder development with multi-cut

grass varieties and legume intercropping; (iii) strengthening preventive healthcare through regular vaccination camps and deworming schedules; (iv) value-addition training for goat milk and meat products to capture higher market prices; and (v) further enterprise diversification into apiary or pisciculture based on resource suitability. As the cattle, poultry and oil palm enterprises mature, overall farm profitability and resilience are expected to rise substantially. The farm will continue serving as a demonstration and learning centre, helping scale climate-resilient livestock technologies across other hill districts of Northeast India.

### Photographs



*Fig1 : FrontLine Demonstration on Assam Hill Goat under a low-input system; KVK Dima Hasao team on-farm visit at Mr. & MrsPhonglo's goat unit, Washaikong village.*



*Fig 2: Mr. Debojit Phonglo with the Best Goatery Farmer Award (Livestock and Poultry Show 2025) and the Best Progressive Farmer Award (KVK Dima Hasao, Mega Tribal Farmers' Conclave 2025).*

### Conflict of Interest

The author(s) declare no competing or conflict of interest.