

Developing Maha Dalit Farmers Through Vegetable Seedling Production

Abstract:

In the rural blocks of Bankey Bazar and Imamganj, Gaya district, Bihar, marginalized communities—primarily Mahadalits, Dalits, Scheduled Castes (SC), and Other Backward Classes (OBC)—continue to face deep socio-economic challenges. Despite numerous governmental initiatives, these vulnerable groups remain trapped in poverty, with limited economic opportunities and persistent social marginalization.

The Developing Economic and Ecological Pathways for Diversifying Income of Vulnerable Groups initiative, funded by the Axis Bank Foundation, aimed to change this narrative. This initiative introduced alternative livelihood options to improve the economic conditions of these marginalized groups, focusing on ecologically sustainable methods. One such approach involved the introduction of polyhouse farming and soil-less nurseries—innovative agricultural practices that enabled smallholder farmers from the Bhuiyan community like Kalo Devi to secure a sustainable income and become more self-reliant.

Introduction:

The ‘Scheduled Caste’ are officially recognized as the most deprived, marginalized sections of India historically. Article 341 of the Indian Constitution gave the caste the necessary recognition in order to safeguard their interest, maintain equality, right to live, etc. Throughout, Scheduled Caste sections got confined under the well-established practice of ‘Untouchabilities’ subjecting them to isolation from the main-stream society (National Human Rights Commission, India, 2021). Bihar, one of the northern states in India is often labelled as the least developed region immersed in poverty. According to the Census of India 2011, the state of Bihar constitutes around 15.9 percent of Scheduled Caste population (i.e., 104 million of Bihar's population) in comparison to India's percentage of 16.6% (Choudhary, 2018).

In 2007, the Government of Bihar identified a subset of Scheduled Caste as ‘Mahadalits’, the most oppressed one. The 2001 census put forth the picture that around 1.66 million Mahadali households of the state comprised 69% of the Scheduled Caste population (Kumar & Somanathan, 2017). The government identified 21 out of 23 Dalit subcastes as Mahadalits which consists of sub castes including—Bantar, Bauri, Bhogta, Bhuiya, Chaupal, Dabgar, Dom (Dhangad), Ghasi, Halalkhor, Hari (Mehtar, Bhangi), Kanjar, Kurariar, Lalbegi, Musahar, Nat, Pan (Swasi), Rajwar, Turi, Dhobi, Pasi, Chamar and Paswan (Dusadh) (Choudhary, 2018).

Table 1. Percentage of SC Population to Total Population (2001 and 2011)

India/State	Percentage of SC 2001			Percentage of SC 2011		
	Total	Rural	Urban	Total	Rural	Urban
India	16.2	17.9	11.8	16.6	18.5	12.6
Bihar	15.7	16.4	10.0	15.9	16.6	10.4

Source: Census of India, 2001, 2011.

The sizeable population is scattered throughout the state and their density varies from district to district. High concentrations of the population are present in Gaya (29.6%) followed by Vaishali (20.7%) and

Nalanda (20%). Among the total population, 8.8% are cultivators whereas 72.25% are agricultural labourers. They are mostly landless with few owning small quantities (less than 1 acre) which are often infertile, unirrigated and unproductive. They lack homestead land and built their houses on others land who generally employ them as sharecroppers or bonded labourers. Struggles are huge due to extreme poverty and unhygienic living conditions that lead to malnourishment and diseases. Educational level is extremely poor (Kumar, 2017).

Area Profile:

The blocks of Bankey Bazar and Imamganj in Gaya district are predominantly inhabited by Mahadalits and Dalits. These communities have long struggled with poverty, social exclusion, and a lack of access to basic resources such as land, water, and financial services. The Agriculture Census 2015-16 highlights that while SCs account for 11.91% of the total number of operational holdings, they manage only 8.61% of the total agricultural land in India. According to a report published in National Bank for Agriculture and Rural Development (NABARD) website, inequalities continue as in places like Gaya approx 86% of households are small and marginal farmers. 2/5th of the population remains in poverty. Around 78% of the population solely depends on the primary sector for livelihood, followed by 4% in secondary sector and 18% in tertiary sector. The situation is worse for women in the region as 7 out of 8 are completely dependent on the primary sector for living. The region is also vulnerable to environmental challenges, with scarce water resources, degraded soil, and the impacts of climate change affecting traditional agricultural productivity. This context makes sustainable agricultural practices essential for improving livelihoods.

Introducing polyhouse-based farming and soil-less nurseries to help the community overcome these barriers. This intervention focused on creating a more stable and diversified income source for smallholder farmers, like Kalo Devi, who were previously dependent on seasonal wage labour and subsistence farming.

Kalo Devi's Life and Background:

Kalo Devi belongs to the Bhuiyan community, one of the most marginalized groups within the Scheduled Castes (SC). Along with the Musahars, the Bhuiyan community is considered to be at the bottom of the social hierarchy among SCs. According to the SC and ST Welfare Department, Government of Bihar (2012), the Bhuiyan community constitutes 4.36% of Bihar's population, with a literacy rate of only 8.9%, the second-lowest after Musahars. Kalo Devi's life reflects the struggles and deprivations common to her community, where access to education, land, and opportunities remain distant dreams.

Kalo Devi was married off at the young age of 16 and now lives in Dighasin village under the Bankey Bazar block in Bihar. Her family consists of six members—her husband, herself, and their four children: one daughter and three sons, including a pair of twins. Life in her village is tough, with most families like hers struggling to make ends meet.

Before marriage, Kalo Devi lived with her mother, brother, and sister in Dukhatpur village. Her father worked in the coal mines of Dhanbad, Jharkhand, and although life was not easy, they managed it. Since education was not a priority for girls in those days, neither Kalo Devi nor her siblings went to school—they only learned to write their names. Her family relied entirely on her father's income, and when he visited home, he would hand over his earnings to her mother to manage the household expenses. Although struggling with everyday living, they were content in their modest life until tragedy struck.

The sudden death of Kalo Devi's father during her teenage years shattered the family. With his passing, the entire responsibility of raising the children fell on her mother. In the society, girls are often seen as burdens on the family, and after her father's death, Kalo Devi's mother felt immense pressure to marry her off. Using the little savings left behind by her father, her family arranged her marriage at the age of 16 to a man from Dighasin village.

Her husband works as a daily wage laborer under the bataya (sharecropping) system, where he earns a portion of the agricultural produce. During off-seasons, he migrates to Punjab and Ludhiana to work as a truck driver. However, the family income is irregular and insufficient to meet their needs. On average, they earn around ₹62,000 annually, barely enough to get by. Kalo Devi manages the household with extreme care, making sure no resources go to waste, knowing how hard her husband works. During the agricultural season, they could somewhat eat whatever vegetables they can grow on other fields; otherwise, they depend on rice, potatoes- grown in other's fields and government rations for survival.

Despite their efforts, there are months when her husband cannot find work or falls ill, and the family is left with no income. These times are the hardest, and it was during one such difficult period in 2022 that Kalo Devi and her husband made the decision to arrange an early marriage for their daughter. Their daughter had studied up to the 8th grade, but they could not afford to keep her in school any longer. Her husband, like Kalo Devi's, is a truck driver working in Punjab, visiting home occasionally.

When Kalo Devi and her husband first got married, they had no land or house of their own. They lived in a bamboo hut in the village's interior. Later, with support from the government, they received a small piece of land (0.093 acres/ 3 Katha) and built a kuccha house, which they call home today. Life was extremely difficult in the early years of their marriage. Her husband was reluctant to work consistently, and there were times when they barely had enough to eat. It was only after Kalo Devi became pregnant with their first child that her husband realised the importance of steady income and began migrating for work. Yet, despite his efforts, their situation remained dire.

Kalo Devi's three sons are still young. Her eldest son is in class 9, while the twins are in class 4 at a school in Bankey Bazar. Although she dreams of giving her sons the education, she could not provide her daughter, the financial burden weighs heavily on her heart. Every day, she worries about how long they will be able to afford their schooling. Without steady income, she fears that her sons too may have to leave school to contribute to the family's survival.

Kalo Devi feels a deep regret for not being able to educate her daughter. It pains her that societal and financial pressures forced her into early marriage, repeating the cycle she had gone through. Now, her sons' future weighs heavily on her mind. She knows that relying solely on her husband's irregular income is not enough. She fears a day might come when even her sons will have to abandon their education. But she is determined to change the course of her family's future. Kalo Devi realises that if she could contribute financially, even in a small way, it could ease the burden and give her children a better chance.

4S India's intervention:

Sarva Seva Samity Sanstha is a non-government organisation that has been actively working in the Bankey Bazar and Imamganj areas, focusing on the formation of Self-Help Groups (SHGs) among women. In 2022, with the support of Axis Bank Foundation, they launched an initiative aimed at empowering marginalized sections within these blocks, helping them gain economic independence and

knowledge. Most residents in Bankey Bazar and Imamganj depend heavily on agriculture, but many are landless and work as daily wage labourers on fields owned by others during the agricultural season. Their earnings consist of small wages and occasionally vegetables, but this meagre income is often insufficient to sustain their families.

Additionally, both blocks face significant challenges that hinder agricultural productivity. The area is not environmentally suitable for agriculture due to various factors such as lack of proper water resources, unproductive land, and inadequate climate conditions. Recognizing these obstacles, 4S India devised an innovative approach aimed at equipping marginalized communities with scientific knowledge and resources for agriculture that had never been utilised before. This initiative promotes environmental sustainability and encourages women to engage in farming, enabling them to earn a decent income without relying on others. By doing so, they can improve their livelihoods while contributing to the overall economic resilience of their communities.

Introduction of Polyhouse Farming and Soilless Nurseries:

The initiative introduced by 4S India focuses on polyhouse-based farming and soilless nurseries—innovative agricultural methods designed to empower small landholders like Kalo Devi and enhance their nutritional and income levels. Polyhouses, made of polythene sheets, provide a controlled environment for growing crops, while soilless nurseries allow plants to thrive in nutrient-rich solutions without soil. These methods are particularly advantageous in the water-scarce regions of Bankey Bazar and Imamganj, where traditional agriculture faces significant challenges. The soilless nursery approach significantly reduces water consumption, enhances control over plant growth, minimises the risk of soil-borne diseases, increases yields, and requires less space, making it ideal for marginalized communities with limited resources.

Implementing these techniques is crucial for addressing the needs of small landholders, as they not only improve nutrition but also provide additional income streams. Furthermore, these sustainable agricultural practices enable women like Kalo Devi, who have little to no prior experience in farming and lack access to land or resources, to participate in agricultural activities with minimal inputs.

However, engaging Kalo Devi in this initiative posed challenges for the organisation. During the initial survey, 4S India approached many marginalized women, encouraging them to learn and earn through these innovative methods. Yet, the response was minimal. Kalo Devi was initially hesitant. She had never engaged in agriculture and felt overwhelmed by the lack of financial backup, knowledge, and resources. Consequently, she rejected the proposal three times.

It wasn't until the fourth approach that Kalo Devi began to reconsider. She observed a neighbour who participated in the program, receiving training and gradually starting to earn an income. This visible success ignited Kalo Devi's interest, prompting her to trust the process, even if she had doubts initially.

The Process Followed:

The process of introducing polyhouse and soilless nursery farming to Kalo Devi began with community-level meetings, where members of her village and Farmer Producer Company Groups (FPCGs) gathered to select suitable farmers for the initiative. FPCGs are hamlet-level institutions designed to meet the needs of participant households, with a focus on seasonality and specific commodities. They facilitate

bulk purchasing to ensure food security and promote collective sales of produce. By maintaining a small scale, FPCGs allow flexibility, autonomy, and choice for households, fostering unity and financial self-reliance through democratic governance and regular meetings. Selection was based on specific criteria: farmers with less than one acre of land, those dependent primarily on wages for livelihood, women-led households, and individuals demonstrating a willingness to commit and embrace social inclusion. Kalo Devi, meeting these conditions, emerged as an ideal candidate for setting up a polyhouse nursery.

A key aspect of the initiative was **capacity building and skill development**. Farmers were introduced to new agricultural practices, focusing on vegetable seedling production and technical know-how through regular training conducted by agricultural experts. The Farmer Field School (FFS) served as a continuous support mechanism, ensuring farmers received guidance tailored to their needs. The FFS model empowers farmers with practical knowledge in advanced agricultural, horticultural, and livestock practices, focusing on improved seed use, non-pesticide management, irrigation techniques, and crop diversification. It follows a learner-centered, experiential approach, with sessions conducted throughout the growing season to enhance hands-on learning and foster community resilience. Senior consultants played a crucial role by providing technical input and regular oversight throughout the process.

The **site selection and planning** phase took into account several factors, such as land availability and access to water, which were essential for ensuring the success of polyhouse farming. Each polyhouse was designed with a compact 10x10 sq. ft. layout, equipped with two Zalkunds (water tanks) for irrigation. The '**Har Ghar Nal Ka Jal**' Yojna of the Bihar Government further alleviated water scarcity by providing Kalo Devi's household with tap water, enabling her to manage the water requirements of her soilless nursery effectively.

With the infrastructure in place, the **procurement and installation** phase involved sourcing materials like GI pipes, green nets, and white polythene sheets (220 mm). The complete setup expenses were covered by 4S India, allowing Kalo Devi to start without financial burdens.

In January 2023, she planted her first batch of seedlings—chilli, tomato, brinjal, and watermelon. After successfully completing her first cycle, she grew a second batch in March and later continued with more crops in July-August and October-November, focusing on vegetables like chilli, tomato, brinjal, and cauliflower. Over these four cycles, Kalo Devi nurtured and sold 3,500 saplings per season, earning Re. 1 per seedling. Her consistent efforts resulted in an annual income of Rs. 14,000—a significant achievement for someone new to agriculture.

"When I held the money, I earned with my own hands for the first time, I couldn't believe it. Now, I can support my husband and children. It makes me so happy."

Kalo Devi now travels to the Bankey Bazar market to sell her saplings. With each sale, her confidence grows, and she feels encouraged to pursue even more opportunities. However, she faces a challenge since the saplings are grown in small trays, resulting in delicate roots. By the time she reaches the market and completes the sale, the saplings often begin to dry out, making it difficult sometimes to maintain their quality. After earning from her nursery, she purchased a cow for ₹19,000—partly with her savings and partly with a loan of ₹10,000 from her SHG group. She eagerly waits for the cow to give birth, hoping to use the milk for her children and earn additional income by selling milk and other products. The cow dung will also be beneficial for cooking fuel and for selling.

In Kalo Devi's words: *"A cow is everything... I can now give my children milk, and I'll sell the milk and cow dung too."*

Kalo Devi's success has started inspiring other women in her village, many of whom now wish to join 4S India's initiatives. She actively motivates and helps other women to participate, ensuring they, too, can generate income through soil-less nurseries. More women like her are now learning these sustainable agricultural practices, reshaping their futures.

Her journey is truly inspiring. Facing deep-rooted generational challenges, Kalo Devi has redefined herself with unwavering determination. She dreams of empowering other women and hopes for a future where girls grow up to be independent—something she regrets not being able to do for her own daughter. Through her efforts, Kalo Devi teaches an essential lesson: women's financial independence is crucial for lasting change.

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