

Heirloom Vegetable Markets and Rural Employment Generation: Evidence from Singimari Heritage Market in Kamrup District of Assam

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Abstract:

This study examines the role of heirloom vegetable markets in promoting rural employment generation and sustainable agricultural transformation, with specific reference to the Singimari Heritage Market in Kamrup district of Assam. Grounded in the theoretical perspectives of agroecology, rural livelihood diversification, and short food supply chains, the research investigates how localized agricultural value chains contribute to employment, income enhancement, and socio-economic resilience among small and marginal farmers.

The study adopts a descriptive and analytical research design, utilizing both primary and secondary data. Primary data were collected through structured household surveys, interviews, and focus group discussions with farmers, traders, women, and youth engaged in market-related activities. A multi-stage sampling technique was employed to select 60 sample farmers associated with the market. Descriptive statistical tools and qualitative thematic analysis were used to assess employment patterns, income distribution, and livelihood diversification.

The findings reveal that the Singimari Heritage Market generates substantial direct and indirect employment across cultivation, post-harvest handling, transportation, and trading activities. The labour-intensive nature of heirloom vegetable cultivation enhances year-round employment opportunities, thereby reducing seasonal underemployment and rural distress migration. The study also highlights significant participation of women and youth, contributing to inclusive livelihood development and social empowerment. Income distribution patterns indicate improved earnings among participating households, with a majority of farmers earning above ₹1,50,000 annually.

Furthermore, the market strengthens local multiplier effects by facilitating direct producer–consumer linkages, enhancing price realization, and stimulating economic activities within the rural economy. It also promotes agro-biodiversity conservation through the cultivation of indigenous vegetable varieties and the preservation of traditional seed systems.

The study concludes that heirloom vegetable markets such as Singimari represent an effective model of sustainable and inclusive rural development. By integrating employment generation, ecological sustainability, and community participation, such markets play a crucial role in advancing agricultural transformation in Assam. The findings suggest the need for policy support to strengthen localized agricultural markets as drivers of rural employment and socio-economic resilience.

Keywords: Heirloom vegetables, rural employment, agroecology, livelihood diversification, Assam, local markets.

INTRODUCTION

Contemporary agricultural transformation in rural India increasingly integrates sustainability, livelihood security, and employment generation alongside productivity growth. In Assam, where small and marginal farmers predominate, localized markets play an essential role in linking agricultural production with income opportunities. In this setting, heirloom vegetable markets function as alternative institutional arrangements that simultaneously support agro-biodiversity conservation and rural employment.

Heirloom cultivation promotes indigenous crop varieties that are locally adapted, culturally embedded, and resilient to environmental stress (Altieri, 2004). By sustaining farmer-managed seed systems and low-external-input practices, such systems enhance ecological stability while maintaining labour-intensive production. Unlike monoculture-based commercial agriculture, heirloom farming strengthens crop diversity and reinforces local food networks.

The Singimari Heritage Market in Kamrup district illustrates how decentralized market platforms can contribute to rural employment within a sustainable development framework. By facilitating direct producer–consumer linkages and encouraging short food supply chains, the market improves farm-level returns and strengthens local multiplier effects (Barrett, 2008). Labour-intensive heirloom cultivation also generates seasonal and off-season employment, thereby reducing underemployment and distress migration (Ellis, 1998).

Overall, the Singimari model aligns with principles of sustainable rural development that integrate economic viability, environmental stewardship, and social inclusion (Pretty, 2008). Examining its employment dynamics highlights the role of localized agricultural value chains in promoting socio-economic resilience and inclusive rural transformation in Kamrup district.

STATEMENT OF THE PROBLEM

Despite growing recognition of sustainable agriculture and localized food systems in rural development discourse, limited empirical attention has been given to the employment implications of heirloom vegetable markets in Assam. Agricultural transformation in India has often been assessed primarily in terms of productivity growth and technological modernization, with comparatively less focus on agro-biodiversity conservation and labour absorption within localized value chains (Pretty, 2008). In regions such as Assam, where small and marginal farmers constitute the majority of cultivators, dependence on labour-intensive agriculture remains high, and underemployment continues to be a structural concern (Ellis, 1998). At the same time, the expansion of commercialized supply chains dominated by hybrid seeds and monoculture practices poses risks to indigenous crop diversity and traditional seed systems (Altieri, 2004).

While localized markets such as Singimari Heritage Market appear to promote indigenous vegetable cultivation and generate both direct and indirect employment opportunities, there is insufficient systematic evidence documenting the scale, nature, and sustainability of such employment effects. Existing literature suggests that short food supply chains can enhance farmer incomes and create rural multiplier effects (Barrett, 2008), yet the specific dynamics of employment generation within heirloom vegetable markets in Kamrup district remain underexplored. Moreover, the role of these markets in mitigating seasonal underemployment, reducing rural distress migration, and strengthening women's and youth participation in agrarian economies has not been rigorously examined.

Therefore, the core problem addressed in this study is the lack of empirical understanding of how heirloom vegetable markets contribute to rural employment generation within the broader framework of agricultural transformation in Kamrup district. Without such analysis, policy discussions on sustainable rural development may overlook the potential of localized agricultural value networks to simultaneously advance biodiversity conservation, livelihood diversification, and socio-economic resilience in Assam.

LITERATURE REVIEW

The literature on agricultural transformation increasingly recognizes that productivity enhancement alone is insufficient for ensuring sustainable rural development. Contemporary scholarship emphasizes the integration of ecological sustainability, livelihood diversification, and inclusive employment within agrarian systems (Pretty, 2008; Tilak, 2015). In developing regions, especially in smallholder-dominated economies, agricultural markets are not merely exchange platforms but institutional mechanisms that shape income distribution, labour absorption, and social equity (Barrett, 2008). Within this broader discourse, heirloom and indigenous vegetable markets represent an alternative pathway that links biodiversity conservation with rural employment generation.

A significant body of literature highlights the ecological importance of agro-biodiversity. Altieri (2004) argues that traditional cropping systems characterized by indigenous varieties and diversified production enhance ecological resilience and reduce dependence on external inputs. Such systems are particularly relevant in climatically vulnerable regions, where local crop varieties often demonstrate superior adaptability. Similarly, agroecological approaches underscore the role of farmer-managed seed systems in sustaining biodiversity while maintaining local food sovereignty. However, while ecological dimensions are well documented, the employment implications of biodiversity-based markets remain less systematically examined.

The concept of short food supply chains has gained prominence in rural development studies. Direct producer–consumer linkages are associated with reduced transaction costs, improved price realization, and stronger local multiplier effects (Barrett, 2008). These localized exchange systems often encourage labour-intensive production and post-harvest activities, thereby generating on-farm and off-farm employment. In rural economies characterized by seasonal unemployment, such labour-intensive value chains can provide supplementary income opportunities and mitigate distress migration (Ellis, 1998). Nevertheless, much of this literature is based on African and European contexts, with relatively limited empirical evidence from northeastern India.

Studies on rural livelihood diversification further demonstrate that non-farm and semi-farm activities linked to agricultural markets contribute significantly to household income stability (Ellis, 1998). Employment generated through transportation, processing, seed preservation, and small-scale trading forms part of a broader rural economic ecosystem. In India, research on agricultural transformation has largely focused on technological modernization, market integration, and policy reforms, often overlooking localized and community-based markets as drivers of employment and resilience (Tilak, 2015). This gap is particularly evident in Assam, where small and marginal farmers predominate and traditional vegetable cultivation remains widespread.

Sustainable rural development frameworks emphasize the need to balance economic viability with environmental stewardship and social inclusion (Pretty, 2008). Heirloom vegetable markets embody these principles by integrating labour-intensive production, biodiversity conservation, and culturally embedded food systems. However, empirical investigations linking heirloom markets directly to measurable employment outcomes are scarce. In the context of Kamrup district, systematic analysis of how localized agricultural value chains—such as those operating in Singimari Heritage Market—contribute to employment generation, gender participation, and socio-economic resilience remains limited.

Therefore, the existing literature provides conceptual foundations in agroecology, livelihood diversification, and market participation but reveals a clear research gap regarding the employment dynamics of heirloom vegetable markets in Assam. Addressing this gap is essential for understanding how grassroots market institutions can support inclusive agricultural transformation and sustainable rural development in the region.

OBJECTIVES OF THE STUDY

- I. To analyze the scale and nature of employment generated by Singimari Heritage Market.
- II. To examine the role of heirloom vegetable cultivation in reducing seasonal underemployment and rural distress migration.
- III. To assess the participation of women and youth in market-related activities and their contribution to household livelihoods.
- IV. To evaluate the broader developmental significance of heirloom vegetable markets in promoting sustainable rural development and socio-economic resilience.

METHODOLOGY

This study adopts a **descriptive and analytical research design** to examine the relationship between heirloom vegetable markets and rural employment generation, with specific reference to Singimari Heritage Market in Kamrup district, Assam. The research integrates both quantitative and qualitative approaches in order to capture the multidimensional nature of employment, livelihood diversification, and agro-biodiversity conservation within localized agricultural value chains.

Study Area

The study is conducted in and around Singimari village under Kamrup district of Assam, where Singimari Heritage Market operates as a decentralized distribution centre for heirloom and indigenous vegetables. The selection of this market is purposive, as it represents a functioning grassroots institution that integrates traditional agricultural practices with localized exchange mechanisms.

Data Sources

Both **primary and secondary data** are used in the study.

- **Primary data** are collected through structured household surveys, semi-structured interviews, and focused group discussions with farmers, traders, transporters, women participants, and youth engaged in market-related activities. Information is gathered on employment type (full-time, part-time, seasonal), income sources, labour use, migration patterns, and participation in ancillary activities such as seed preservation and value addition.
- **Secondary data** are obtained from government reports, agricultural department records, published research articles, census data, and relevant literature on agroecology, rural employment, and short food supply chains (Altieri, 2004; Barrett, 2008; Ellis, 1998; Pretty, 2008).

Sampling Technique

A **multi-stage sampling method** is adopted. In the first stage, Singimari Heritage Market is selected purposively. In the second stage, households engaged in heirloom vegetable cultivation and market activities are identified. From this list, a representative sample of farmers and market participants is selected using simple random sampling. Special attention is given to ensuring adequate representation of women and youth respondents to assess inclusive employment dynamics.

Methods of Analysis

The collected data are analyzed using both descriptive statistics and qualitative interpretation.

- I. **Descriptive statistical tools** such as percentages, averages, and frequency distributions are used to measure the scale and characteristics of employment generated by the market.
- II. Employment intensity, seasonal variation in labour demand, and income contribution from market activities are examined.
- III. Qualitative responses are analyzed thematically to understand perceptions regarding underemployment reduction, distress migration, livelihood diversification, and socio-economic resilience.

IV. The study also evaluates local multiplier effects by assessing how income earned from market participation circulates within the rural economy.

Analytical Framework

The research is guided by the theoretical perspectives of agroecology, rural livelihood diversification, and short food supply chains. Agroecological principles help explain the biodiversity and sustainability dimensions (Altieri, 2004), while livelihood diversification theory provides a framework for analyzing employment and income strategies (Ellis, 1998). The concept of market participation and multiplier effects informs the assessment of localized economic linkages (Barrett, 2008). Sustainable rural development principles (Pretty, 2008) are used to interpret the broader developmental implications.

Scope and Limitations

The study is geographically confined to Singimari Heritage Market and its surrounding villages in Kamrup district. While the findings provide valuable insights into localized employment dynamics, they may not be generalized to all heirloom vegetable markets in Assam without further comparative research.

Table: Annual Income Distribution of Sample Farmers in Singimari Heritage Village (N = 60) in 2022

Sl. No.	Annual Income Category (₹)	Number of Farmers	Percentage (%)
1	Below ₹50,000	1	1.66
2	₹50,000 – ₹1,00,000	10	16.66
3	₹1,00,000 – ₹1,50,000	12	20
4	₹1,50,000 – ₹2,00,000	21	35
5	Above ₹2,00,000	16	26.66
Total	Annual Income Category (₹)	60	100.0

Explanation of the Table

The table presents the **annual income distribution of 60 sampled farmers in Singimari Heritage Village**. It shows that a majority of farmers earn **moderate to relatively higher incomes from agricultural activities**, particularly from heirloom vegetable cultivation linked to Singimari Heritage Market.

The largest group, **35% (21 farmers)**, earns between **₹1,50,000 and ₹2,00,000 annually**, followed by **26.66% (16 farmers)** who earn **above ₹2,00,000**. About **20% (12 farmers)** fall within the **₹1,00,000–₹1,50,000** income range, while **16.66% (10 farmers)** earn between **₹50,000 and ₹1,00,000**. Only **1.66% (1 farmer)** reports an income **below ₹50,000**.

Overall, the distribution indicates that **most farmers earn ₹1,50,000 or more per year**, highlighting the role of heirloom vegetable cultivation and local market participation in improving rural household income.

DISCUSSION

The study demonstrate that heirloom vegetable markets play a significant role in generating rural employment and strengthening livelihood diversification in Assam. Evidence from the Singimari Heritage Market indicates that localized agricultural markets can function as effective institutional platforms linking traditional farming practices with rural economic development. By providing a direct outlet for heirloom vegetable cultivation, the market contributes not only to improved farm income but

also to broader socio-economic development in rural communities. Similar studies suggest that smallholder participation in local markets can enhance income opportunities and support rural development processes (Barrett, 2008).

One of the key observations of the study is the **labour-intensive nature of heirloom vegetable cultivation**. Compared with hybrid monocropping systems, heirloom vegetable farming requires greater human labour for activities such as seed selection, cultivation, harvesting, sorting, and marketing. This creates employment opportunities for both family members and hired labour. In addition, the functioning of the Singimari Heritage Market generates indirect employment in post-harvest handling, packaging, transportation, and retail trading. These activities collectively form a localized agricultural value chain that expands employment opportunities within the rural economy.

The study also indicates that diversified heirloom vegetable production helps reduce **seasonal underemployment and temporary migration**. Because farmers cultivate a variety of vegetables across different cropping cycles, employment opportunities are available throughout the year. This reduces dependence on seasonal wage labour outside the village and contributes to greater income stability for rural households. Such patterns are consistent with the concept of rural livelihood diversification, which emphasizes multiple income sources as a strategy for reducing vulnerability (Ellis, 1998).

Another important outcome is the **active participation of women and youth** in market-related activities. Women are involved in cultivation, seed preservation, sorting, and direct marketing, while youth engage in transportation, communication with buyers, and small-scale trading. Their participation not only improves household income but also promotes social inclusion and local entrepreneurship.

Furthermore, the study highlights the **economic multiplier effects** created by the market. Direct producer–consumer linkages allow farmers to obtain better prices by minimizing intermediaries. Income generated from vegetable sales is often reinvested in local services, agricultural inputs, and small businesses, thereby stimulating economic activities within the village economy. At the same time, the cultivation of indigenous vegetable varieties supports **agro-biodiversity conservation and environmentally sustainable farming practices**, which are key principles of agroecology (Altieri, 2004; Pretty, 2008).

Overall, the evidence suggests that heirloom vegetable markets such as Singimari represent a viable model for **inclusive and sustainable agricultural transformation**. By combining employment generation, income enhancement, biodiversity conservation, and community participation, these markets contribute significantly to rural development in Assam.

FINDINGS OF THE STUDY

The empirical investigation of Singimari Heritage Market reveals that heirloom vegetable markets play a significant role in rural employment generation and livelihood diversification in Kamrup district, Assam. The findings are presented in line with the objectives of the study.

1. Scale and Nature of Employment Generation

The study finds that Singimari Heritage Market generates both direct and indirect employment opportunities. Direct employment is primarily concentrated in vegetable cultivation, post-harvest handling, sorting, grading, transportation, and retail trading. A majority of participating households reported that heirloom vegetable cultivation is more labour-intensive compared to hybrid-based monocropping systems. This labour intensity increases demand for family labour as well as hired workers, particularly during peak agricultural seasons. Additionally, indirect employment is created through ancillary activities such as seed preservation, traditional processing, packaging, and local

transport services. The market thus functions as a localized value chain that supports multiple layers of employment beyond primary production.

2. Reduction of Seasonal Underemployment and Migration

The findings indicate that heirloom vegetable cultivation contributes to reducing seasonal underemployment in the study area. Because diversified vegetable production occurs across multiple cropping cycles, employment opportunities are distributed throughout the year rather than being confined to a single harvest season. Respondents reported a decline in temporary out-migration during peak cultivation and marketing periods. The availability of local income-generating opportunities has helped stabilize household earnings and reduce dependence on external wage labour markets.

3. Participation of Women and Youth

The study highlights substantial participation of women and youth in market-related activities. Women are actively involved in cultivation, seed selection, sorting, processing, and direct selling in the market. In several households, women's earnings from vegetable sales contribute significantly to daily household expenses and children's education. Youth participation is particularly visible in transportation, digital communication with buyers, and small-scale trading. The inclusive character of the market has strengthened household livelihood diversification and enhanced social empowerment within the community.

4. Income Enhancement and Local Multiplier Effects

Market participation has improved income stability among small and marginal farmers. Direct producer-consumer linkages enable farmers to secure relatively better prices by minimizing intermediaries. The study observes that income earned from heirloom vegetable sales is frequently reinvested within the local economy, including expenditure on agricultural inputs, local services, education, and small businesses. This circulation of income generates multiplier effects, indirectly supporting additional employment within the village economy.

5. Biodiversity Conservation and Sustainable Development

The findings confirm that the market encourages the cultivation and exchange of indigenous vegetable varieties, contributing to agro-biodiversity conservation. Farmers maintain traditional seed systems and low-external-input practices, which reduce production costs and ecological risks. By integrating employment generation with biodiversity preservation, the market aligns with broader principles of sustainable rural development. The coexistence of traditional cultivation practices with localized market integration demonstrates a balanced pathway of agricultural transformation in the region.

6. Socio-Economic Resilience

Overall, Singimari Heritage Market strengthens socio-economic resilience by diversifying income sources, enhancing labour absorption, and promoting community-based exchange systems. The market reduces vulnerability associated with monocropping and unstable wage employment. It also reinforces social networks among producers and traders, thereby fostering collective economic security.

In summary, the study establishes that Singimari Heritage Market serves not merely as a vegetable trading centre but as an institutional mechanism that integrates employment generation, livelihood diversification, biodiversity conservation, and inclusive rural development. These findings underscore the importance of localized agricultural value chains in supporting sustainable agricultural transformation in Kamrup district.

CONCLUSION

The present study demonstrates that heirloom vegetable markets can function as dynamic institutional mechanisms for promoting rural employment generation, livelihood diversification, and ecological

sustainability within the broader process of agricultural transformation. Evidence from Singimari Heritage Market in Kamrup district indicates that localized agricultural value chains extend beyond mere exchange platforms and actively contribute to labour absorption, income stabilization, and socio-economic resilience among small and marginal farmers.

The findings reveal that the market generates both direct and indirect employment opportunities across cultivation, post-harvest management, transportation, trading, seed preservation, and value-addition activities. Because heirloom vegetable production is comparatively labour-intensive, it creates year-round employment avenues that help mitigate seasonal underemployment and reduce distress migration. The study also underscores the inclusive nature of the market, with significant participation of women and youth, thereby strengthening household income security and fostering social empowerment.

In addition to employment effects, Singimari Heritage Market contributes to agro-biodiversity conservation by encouraging the cultivation of indigenous vegetable varieties and sustaining traditional seed systems. This integration of biodiversity preservation with localized market exchange reflects key principles of agroecology and sustainable rural development (Altieri, 2004; Pretty, 2008). Furthermore, the operation of short food supply chains enhances producer–consumer linkages and generates local multiplier effects that extend economic benefits throughout the rural economy (Barrett, 2008). By supporting diversified livelihood strategies, the market aligns with theoretical perspectives on rural livelihood resilience (Ellis, 1998).

Overall, the study affirms that Singimari Heritage Market represents a viable model of inclusive and sustainable agricultural transformation in Assam. It illustrates how grassroots market institutions can simultaneously advance employment generation, environmental stewardship, and socio-economic stability. The findings suggest that policy frameworks aimed at rural development in northeastern India should recognize and strengthen such localized agricultural networks. Future research may expand comparative analysis across similar markets in Assam to further evaluate their long-term employment potential and scalability within regional development strategies.

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