



## **Gender Economics in Agriculture: Women's Role and Economic Empowerment in India**

**Dr. Sonia Sharma**

Department of Economics, Baba Mastnath University Rohtak, Haryana

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**Abstract:** Women play a crucial role in India's agricultural sector, contributing significantly to food production, labor, and rural livelihoods. Despite their substantial involvement, women farmers face systemic challenges, including limited land ownership, restricted access to credit, technology, and markets, and social norms that hinder economic empowerment. This study examines the economic role of women in Indian agriculture, analyzing factors influencing their empowerment and the impact on household welfare and agricultural productivity. Using mixed methods, including survey data and qualitative interviews from diverse agro-ecological zones, the paper highlights pathways to enhance women's economic empowerment in agriculture. The findings underscore the need for targeted policies that address gender disparities, improve resource access, and support women's leadership in the agricultural economy.

**Keywords:** Women in agriculture, gender economics, economic empowerment, India, agricultural productivity, rural livelihoods.

### **1. Introduction**

Agriculture remains a cornerstone of India's economy, employing nearly half of the workforce and contributing substantially to GDP. Within this sector, women constitute a significant share of the agricultural labor force. According to the National Sample Survey Office (NSSO) and other government data, women account for approximately 33–40% of the agricultural workforce, with even higher shares in certain regions and crops. Their roles encompass a wide range of activities, from land preparation and sowing to harvesting, post-harvest processing, and marketing.

Despite their critical contributions, women in Indian agriculture often experience economic marginalization. Land ownership remains predominantly male, with women holding less than 15% of agricultural land titles nationally. This lack of ownership limits their ability to access credit, government schemes, and agricultural inputs, which in turn affects productivity and income. Social

norms and gender roles further restrict women's participation in decision-making and access to technology and markets. These disparities reduce women's economic empowerment and limit the overall development potential of the agricultural sector.

Economic empowerment of women in agriculture is essential not only for gender equity but also for enhancing agricultural productivity and rural development. Empowered women tend to invest more in household health, education, and nutrition, creating positive intergenerational effects. Moreover, closing gender gaps in agriculture could substantially increase farm output and reduce rural poverty.

This study focuses on the economic role of women in Indian agriculture and the factors that influence their empowerment. It examines the barriers women face and explores how improving their access to resources and decision-making can enhance agricultural productivity and household welfare. By analyzing data from multiple states representing diverse agro-ecological zones and socio-cultural contexts, the study provides a comprehensive understanding of gender economics in Indian agriculture.

## **2. Aim and Scope**

The aim of this study is to examine the role of women in Indian agriculture from an economic perspective, focusing on their contributions, challenges, and pathways to empowerment. The study explores how gender disparities affect agricultural productivity and rural livelihoods and identifies policy levers to promote women's economic empowerment within the agricultural economy.

### **The scope covers:**

- Women's participation in agricultural activities across different regions of India.
- Gender disparities in land ownership, access to credit, technology, and markets.
- The impact of women's empowerment on household welfare and agricultural productivity.
- Policy and program interventions supporting gender equity in agriculture.

### 3. Objectives

- To quantify women's participation in key agricultural activities across selected Indian states.
- To analyze gender disparities in land ownership, credit, and technology access.
- To assess the relationship between women's empowerment and agricultural productivity.
- To identify socio-cultural and institutional barriers to women's economic empowerment.
- To recommend policy measures and interventions to promote gender equity in agriculture.

### 4. Literature Review

Recent literature emphasizes the vital role of women in agriculture and the persistent gender gaps limiting their economic empowerment. According to Doss (2018), women contribute up to 43% of agricultural labor globally, yet own a disproportionately small share of land and productive assets. In India, Agarwal (2015) highlights that despite women's extensive involvement in farming, legal and social barriers restrict their land rights, which undermines their economic autonomy.

Studies by Pandey et al. (2020) and Singh & Kaur (2021) show that limited access to credit and technology hampers women's productivity and income. Women often lack collateral to secure loans and face exclusion from extension services, which reduces adoption of modern agricultural practices. Research by Srivastava et al. (2019) finds that women's decision-making power within households is crucial for improving farm management and investment in nutrition and education.

The link between women's empowerment and agricultural productivity is well-documented. Quisumbing & Malapit (2018) argue that empowering women leads to higher yields and better household welfare. Programs targeting women's land rights, access to finance, and capacity building have shown positive outcomes in India and other developing countries (FAO, 2020).

However, socio-cultural norms remain significant barriers. Studies by Kabeer (2016) and Narayanan & Saha (2022) stress that patriarchal attitudes limit women's mobility, control over

resources, and participation in community decision-making. Addressing these norms requires integrated policy approaches combining legal reform, education, and community engagement.

## **5. Methodology**

This study adopts a mixed-methods approach, combining quantitative surveys and qualitative interviews to capture a holistic view of women's role and empowerment in Indian agriculture.

### **5.1 Sampling and Data Collection**

Primary data were collected from 400 farm households across four states representing diverse agro-ecological zones and socio-economic contexts: Punjab, Haryana, Maharashtra, and West Bengal. Stratified random sampling ensured inclusion of small, medium, and large farms, and households with varying levels of women's participation.

Structured questionnaires captured data on agricultural activities, land ownership, access to credit and technology, decision-making roles, income, and household welfare indicators. Women respondents were prioritized to ensure their perspectives.

Qualitative data were obtained through focus group discussions and in-depth interviews with women farmers, agricultural extension officers, and local NGOs. These interviews explored socio-cultural factors, challenges, and success stories related to women's empowerment.

### **5.2 Data Analysis**

Quantitative data were analyzed using descriptive statistics, cross-tabulations, and regression models to examine relationships between women's empowerment indicators and agricultural productivity and income. Qualitative data underwent thematic content analysis to identify recurring patterns and contextual insights.

## **6. Data Analysis and Results**

This study's data analysis focuses on assessing women's participation in agriculture, gender disparities in resources and decision-making, and the impact of women's empowerment on

agricultural productivity and household welfare across four Indian states: Punjab, Haryana, Maharashtra, and West Bengal. Quantitative data from 400 farm households were analyzed alongside qualitative insights to present a comprehensive picture.

**Table 1: Women’s Participation in Key Agricultural Activities (%)**

<b>Agricultural Activities</b>	<b>Punjab</b>	<b>Haryana</b>	<b>Maharashtra</b>	<b>West Bengal</b>
Land preparation	25	40	35	38
Sowing	30	45	40	42
Weeding	55	70	60	65
Harvesting	60	75	65	70
Post-harvest processing	50	65	55	60

**Description:** Table 1 shows that women’s participation is highest in weeding, harvesting, and post-harvest processing, with Haryana and West Bengal showing higher engagement rates than Punjab and Maharashtra. Participation in land preparation and sowing remains lower, reflecting gendered division of labor.

**Table 2: Gender Disparities in Land Ownership and Credit Access**

<b>Gender Disparities</b>	<b>Punjab</b>	<b>Haryana</b>	<b>Maharashtra</b>	<b>West Bengal</b>
Women land ownership (%)	12	10	14	13
Women with access to credit (%)	20	18	22	19

**Description:** Table 2 highlights persistent gender disparities in land ownership and credit access, with women owning less than 15% of land across all states and less than a quarter having access to formal credit.

**Table 3: Impact of Women’s Empowerment on Farm Productivity**

<b>Women’s Empowerment on Farm Productivity</b>	<b>Coefficient</b>	<b>Standard Error</b>	<b>p-value</b>
Women’s decision-making index	0.35	0.08	<0.001
Access to credit	0.22	0.07	0.004
Training received	0.18	0.06	0.010

**Description:** Table 3 shows regression results indicating a positive and statistically significant relationship between women’s empowerment indicators and farm productivity. Decision-making power has the strongest effect.

**Table 4: Household Welfare Indicators by Women’s Empowerment Level**

<b>Household Welfare Indicators</b>	<b>Low Empowerment</b>	<b>Medium Empowerment</b>	<b>High Empowerment</b>
Average monthly income (USD)	320	450	600
Children’s school attendance (%)	70	85	95
Nutritional status score	55	70	85

**Description:** Table 4 demonstrates that households with higher women’s empowerment show better income levels, higher children’s school attendance, and improved nutritional status, indicating a positive spillover effect on welfare.

## 7. Discussions:

**Table 1** illustrates the percentage of women participating in various agricultural activities. Women’s involvement is highest in labor-intensive tasks such as weeding, harvesting, and post-harvest processing, with participation rates ranging from 50% to 75% across states. Haryana and West Bengal show particularly high engagement, reflecting cultural and agro-ecological differences that assign women more responsibilities in these tasks. Lower participation in land

preparation and sowing (25–45%) indicates a gendered division of labor, where physically demanding or mechanized tasks are often male-dominated.

**Table 2** highlights persistent gender disparities in land ownership and credit access. Across all states, women own less than 15% of agricultural land, severely limiting their ability to leverage land as collateral for loans or influence farm decisions. Access to formal credit also remains low, with fewer than 25% of women having credit access, which restricts their ability to invest in inputs or technology. These disparities underline structural barriers that limit women’s economic empowerment despite their high labor contributions.

The regression results in **Table 3** quantify the positive impact of women’s empowerment on farm productivity. The women’s decision-making index, which aggregates involvement in farm planning, input use, and sales decisions, shows the strongest positive correlation with productivity (coefficient = 0.35,  $p < 0.001$ ). Access to credit and training also significantly enhance productivity, demonstrating that empowering women through resource access and capacity building translates into measurable improvements in farm output.

Finally, **Table 4** presents household welfare indicators by women’s empowerment levels. Households with higher empowerment scores show substantially better outcomes: monthly incomes rise from USD 320 in low empowerment households to USD 600 in highly empowered ones. Children’s school attendance and nutritional status similarly improve, reflecting the broader developmental benefits of gender equity in agriculture. These findings corroborate existing literature that women’s empowerment benefits not only productivity but also social dimensions of rural livelihoods.

Qualitative data from interviews and focus groups reinforced these quantitative findings. Women reported that increased participation in decision-making and access to credit enabled them to adopt improved agricultural practices, diversify income sources, and invest more in their families’ well-being. However, socio-cultural constraints such as patriarchal norms and limited mobility continue to restrict many women’s empowerment.

## 8. Conclusions

This study affirms the critical role women play in Indian agriculture and the profound economic benefits that arise from empowering them. Despite constituting a large proportion of the agricultural labor force, women remain marginalized in terms of land ownership, credit access, and decision-making authority. These disparities not only undermine women's economic autonomy but also constrain the productivity and development potential of India's agriculture.

The data clearly show that increasing women's empowerment—through enhancing their role in farm decisions, improving access to credit and training, and addressing land rights—leads to significant gains in agricultural productivity. Women's decision-making power emerges as a particularly strong driver, highlighting the importance of shifting intra-household dynamics and promoting women's agency. The positive correlation between empowerment and better household welfare indicators, such as income, education, and nutrition, underscores the far-reaching social benefits of gender equity beyond farm output alone.

However, these gains are tempered by persistent structural and cultural barriers. Limited land ownership restricts women's collateral for loans and weakens their bargaining power, while exclusion from extension services limits their knowledge and technology uptake. Deep-rooted patriarchal norms continue to confine women's mobility and participation in community decision-making, reinforcing traditional gender roles that undervalue their contributions.

To unlock the full potential of women in agriculture, policy interventions must be multifaceted and context-specific. Legal reforms to secure women's land and inheritance rights are fundamental but insufficient on their own. They must be complemented by programs that improve women's access to affordable credit, agricultural inputs, training, and markets. Strengthening women's participation in farmer producer organizations and cooperatives can also enhance their collective bargaining power and resource access.

Education and community engagement are key to transforming socio-cultural attitudes. Awareness campaigns that challenge gender stereotypes, combined with initiatives that encourage male allies and community leaders to support women's empowerment, can facilitate changes in social norms.



Integrating gender-sensitive approaches into agricultural extension and rural development programs will ensure that women's specific needs and constraints are addressed.

Technological innovations, including digital platforms, mobile banking, and women-friendly machinery, hold promise for bridging existing gaps in access and information. These tools can increase women's efficiency, reduce drudgery, and open new market opportunities. However, ensuring equitable access to these technologies requires deliberate efforts to overcome digital divides.

In conclusion, empowering women in Indian agriculture is not only a matter of social justice but a strategic imperative for accelerating agricultural growth, food security, and rural development. The evidence presented affirms that closing gender gaps improves productivity, uplifts household welfare, and fosters sustainable livelihoods. Achieving this requires coordinated actions across legal, institutional, financial, and cultural domains. With targeted investments and inclusive policies, India can harness the full potential of its women farmers and pave the way for more equitable and prosperous rural futures.

## **9. Limitations**

This study's cross-sectional design limits causal inference. Self-reported data may introduce response bias. Geographic focus on four states, while diverse, may not capture all regional variations across India. Further research is needed for more granular and nationally representative analysis.

## **10. Future Scope**

Future research could explore longitudinal impacts of gender-focused interventions on farm productivity and rural livelihood resilience. There is also scope to study the inter sectionality of caste, class, and gender in agricultural empowerment. Additionally, examining the role of digital technologies in bridging gender gaps could offer new insights.

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