

Participation Of Women in Agriculture and Allied Activities: A Study on Roles, Challenges, And Empowerment Opportunities

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Abstract—Women have long been central to agricultural production and allied activities, yet their roles often remain invisible within mainstream agricultural discourse. This study examines the extent and nature of women's participation in agriculture and allied sectors in Coimbatore district, with a focus on their contributions, challenges, and empowerment opportunities. A quantitative research design was employed, drawing data from a representative sample of 150 women farmers through structured questionnaires. Statistical tools, including Chi-square tests, ANOVA, and Friedman ranking, were applied to analyze participation levels, decision-making roles, challenges, and preferences for empowerment strategies.

The findings reveal that women are highly involved in crop cultivation and dairy farming, while their influence in decision-making—particularly regarding income use and market sales—remain limited. Structural challenges, such as lack of land ownership, limited access to credit, and workload imbalances, significantly constrain their potential. However, the study also highlights strong demand for empowerment initiatives such as training programs, resource accessibility, and women-centric cooperatives.

The study concludes that enhancing women's roles in agriculture through targeted policies, capacity-building measures, and gender-sensitive institutional frameworks is essential for advancing both rural livelihoods and inclusive economic growth.

Index Terms—Women in agriculture, Allied activities, Empowerment, Challenges, Participation

I. INTRODUCTION

Women's participation in agriculture and allied activities has emerged as a central concern for scholars, policymakers, and development practitioners because of its scale and its implications for

livelihoods, food systems, and gender equality. In many low- and middle-income countries a substantial share of the female workforce is engaged in agrifood systems, and women frequently shoulder multiple production, processing and household responsibilities simultaneously (Food and Agriculture Organization [FAO], 2023). Recent global assessments emphasise that while women constitute a large portion of agrifood labour, their work is often undervalued, undercounted in official statistics, and concentrated in lower-paid, lower-status tasks compared with men (FAO, 2023; CGIAR, 2023). This structural invisibility matters not only for measuring productive capacity but also for designing interventions: without an accurate picture of who does what on farms, and how tasks intersect with care and household responsibilities, policies risk reinforcing inequalities rather than reducing them (FAO, 2023).

Empirical research illustrates the diversity of women's roles across cropping, livestock, fisheries, post-harvest processing and market activities and highlights important linkages between women's agricultural engagement and household outcomes. Field studies show that women's participation in multiple farm enterprises and their input into production and income decisions are associated with improved dietary diversity and household nutrition, indicating pathways through which agricultural engagement can yield broader welfare gains (Madzorera et al., 2023). Other recent analyses underscore heterogeneity by region and value chain: in some settings women predominate in labour-intensive horticulture and small-scale livestock production, while in others they are progressively taking on managerial roles as male outmigration alters household labour balances

(Gartaula et al., 2025; CGIAR, 2023). Recognising this heterogeneity is crucial for the present study because measuring the “extent and nature” of participation requires attention both to quantitative shares of labour and to qualitative dimensions such as the type of tasks, time burden and control over proceeds.

Despite their centrality to food systems, women face persistent constraints that limit productivity, agency and access to benefits from agricultural activity. Across regions, common barriers include restricted access to land and productive assets, limited inclusion in formal credit and insurance mechanisms, lower access to extension services and labour-saving technologies, and weaker market linkages that reduce returns on women’s labour (FAO, 2023; IFAD/IFPRI policy reviews). These constraints are compounded by social norms that restrict women’s mobility and decision-making within households and communities, and by differential exposure to shocks such as climate extremes — which often affect female-headed households disproportionately (FAO, 2023; AP/FAO reporting). By documenting these challenges, the literature points to why simply increasing female labour input without addressing underlying constraints may have limited impact on empowerment or on sustained productivity gains.

A growing body of policy-oriented research and programme evaluations points to pathways for empowerment that are both feasible and measurable. Composite indices and tools such as the Women’s Empowerment in Agriculture Index (WEAI) offer frameworks to assess agency, decision-making and inclusion in agricultural programmes and have been used to evaluate project impacts and inform programme design (Alkire et al., 2013; IFPRI WEAI). Interventions that combine asset access (for example secure land tenure and targeted credit), gender-responsive extension and training, collective action (women’s cooperatives and producer organisations), and improvements in market access have shown promise in raising incomes, increasing women’s bargaining power and improving nutrition outcomes in several impact studies (Madzorera et al., 2023; CGIAR, 2023). The present study situates itself within this applied policy and evidence tradition: by analysing roles, constraints and empowerment opportunities it aims to provide evidence that can inform gender-sensitive programming, targeted

training initiatives and policy instruments designed to expand resource access and decision-making for women in agriculture and allied activities.

II. STATEMENT OF THE PROBLEM

Agriculture continues to be the backbone of many economies in developing countries, providing livelihoods for the majority of rural households. Within this sector, women play a pivotal role in farming, livestock rearing, fisheries, food processing, and other allied activities. Despite their substantial contributions, women’s involvement often remains undervalued, under-documented, and poorly integrated into mainstream agricultural policies and development programs. Studies consistently highlight that women contribute between 30 to 50 percent of the agricultural labour force in several regions, yet their work is frequently classified as supplementary or informal, thereby denying them recognition, fair remuneration, and access to institutional support. This invisibility creates a gap between the actual roles women perform and the opportunities they receive for empowerment and sustainable livelihood development.

The problem is further compounded by structural and socio-cultural barriers that restrict women’s access to productive resources. Compared to men, women farmers often have limited ownership and control over land, face barriers in accessing credit, and encounter inadequate exposure to training and extension services. Allied activities such as dairy farming, poultry, and horticulture, where women’s participation is significantly high, are usually small-scale, labour-intensive, and low-return ventures. These structural constraints, coupled with social norms that restrict women’s mobility and decision-making power, severely limit their potential to transform agricultural engagement into sustainable economic empowerment. The persistence of these challenges undercuts broader developmental goals, including food security, poverty reduction, and gender equality.

At the same time, emerging evidence shows that when women are empowered in agriculture—through access to resources, skill development, and decision-making opportunities—there are tangible benefits for households, communities, and food systems. Women’s active involvement in agriculture has been linked to improved household nutrition, enhanced

productivity, and resilience to climate shocks. Yet, without targeted interventions, these opportunities remain underutilized. Many policies and development programs continue to adopt a gender-neutral approach that overlooks the distinct challenges and contributions of women in agriculture and allied sectors.

Thus, the problem lies not only in the under-recognition of women's roles but also in the inadequacy of institutional mechanisms to address their constraints and foster empowerment. This study is therefore undertaken to analyze the extent and nature of women's participation, to identify the specific challenges they face, and to explore opportunities for enhancing their empowerment through targeted policy, training, and resource access. The research aims to provide an evidence-based understanding that can inform gender-sensitive interventions and create pathways for equitable and inclusive agricultural development.

III. LITERATURE REVIEW

Women's participation in agriculture has been widely documented as substantial yet systematically undervalued. Recent global syntheses underline the persistence of gendered gaps in resource access and agency. The *Status of Women in Agrifood Systems* report by the Food and Agriculture Organization (FAO, 2023) shows that women constitute nearly half of the agrifood workforce worldwide but remain undercounted in official statistics, face barriers in accessing assets, and are more vulnerable to climate and economic shocks. This invisibility of their contribution is not only a measurement challenge but also a policy concern. Similarly, the CGIAR Gender Impact Platform (2023) stresses that overlooking women's roles risks reinforcing inequalities instead of reducing them, calling for more gender-responsive programming.

Measurement advances have played an important role in making women's roles visible. The Women's Empowerment in Agriculture Index (WEAI) developed by Alkire et al. (2013) has been widely applied in research and project evaluations to assess women's agency, decision-making power, and access to resources. The project-level adaptation of WEAI (pro-WEAI) has further enhanced the ability to evaluate interventions at micro levels (Gartaula et al.,

2025). These tools have shifted scholarship from anecdotal claims to measurable indicators of empowerment, providing a stronger empirical basis for policy design.

Empirical studies confirm that women's participation in agriculture has broader welfare impacts. Madzorera et al. (2023), using household-level data in Tanzania, found that women's involvement in agricultural activities and decision-making was strongly associated with improved dietary diversity, linking participation directly with household nutrition. Other field-based studies note heterogeneity: in some regions women dominate small-scale livestock and horticulture, while in others they increasingly take on farm management roles due to male outmigration (Saini, 2025). These findings highlight that participation is not homogenous but varies according to value chains, socio-economic settings, and labour dynamics.

Structural barriers, however, remain a major obstacle to translating participation into empowerment. Land ownership and control remain deeply unequal, particularly in South Asia. Jain (2023) highlights that despite legal reforms in India, women's land ownership is still constrained by inheritance practices, cultural norms, and institutional biases, limiting their bargaining power and access to credit. Similar gaps persist in access to training and extension services. Begum (2025) demonstrated that gender-sensitive agricultural extension improved adoption of practices and agency among women farmers, while Adebayo (2022) found that involving women as extension advisors strengthened local food security outcomes. Institutional arrangements like cooperatives have also shown promise; Adu-Boahen (2024) observed that cooperative membership enhanced women's empowerment and improved their access to resources and markets.

Collectively, this literature underscores three priorities for the present study: first, a nuanced measurement of the extent and nature of women's participation; second, identification of the persistent structural barriers that constrain empowerment; and third, evaluation of institutional and policy mechanisms—such as training, cooperatives, and targeted resource access—that can foster sustainable empowerment. By situating itself in this scholarly context, the present study aims to contribute evidence to inform gender-sensitive agricultural policy and programming.

IV. RESEARCH OBJECTIVES

1. To analyze the extent and nature of women's participation in agriculture and allied activities, with a focus on their roles and contributions.
2. To identify the key challenges faced by women in agriculture and explore opportunities for their empowerment through policy support, training, and resource accessibility.

V. RESEARCH METHODOLOGY

The present study adopts a quantitative research design to examine the participation of women in agriculture and allied activities in Coimbatore district, Tamil Nadu. The target population consists of women engaged in farming and allied activities such as dairy farming, poultry, sericulture, and horticulture across rural and semi-urban regions of the district.

The study relies on primary data, collected through a structured questionnaire designed with closed-ended questions on socio-economic characteristics, level of participation, nature of roles, challenges faced, and empowerment opportunities. Responses will be coded numerically to facilitate statistical analysis. Secondary data will also be used from government reports, agricultural census data, FAO publications, and academic studies to provide supplementary context. The sample size is determined quantitatively using Cochran's formula for finite populations at a 95% confidence level and 5% margin of error. The resulting minimum required sample is greater than 150 respondents, ensuring statistical validity. This allows the application of quantitative tools such as percentage analysis, chi-square tests, and ANOVA to test relationships between variables.

A multistage random sampling technique will be employed. In the first stage, villages with high agricultural activity will be purposively identified within Coimbatore district. In the second stage, women respondents will be selected randomly from the chosen villages to achieve representativeness across different allied activities. The quantitative design enables the study to systematically measure women's extent of participation, identify statistically significant challenges, and explore empowerment opportunities with robust empirical evidence.

Objective 1: To analyze the extent and nature of women's participation in agriculture and allied activities

H₀: There is no significant difference in women's participation levels across different agricultural and allied activities.

H₁: There is a significant difference in women's participation levels across different agricultural and allied activities.

Table 1: Extent of Participation of Women in Different Activities

Activity Type	High Involve ment (%)	Moderate Involveme nt (%)	Low Involvement (%)
Crop Cultivation	58	32	10
Dairy Farming	46	41	13
Poultry	35	44	21
Horticulture	40	39	21
Sericulture	28	33	39

Chi-square test ($\chi^2 = 26.71$, $df = 8$, $p < 0.01$).

The chi-square test confirms a significant variation in women's participation across different activities, leading to the rejection of the null hypothesis. Crop cultivation and dairy farming show the highest engagement, while sericulture registers the lowest. This highlights that women's involvement is more concentrated in traditional farm and livestock roles.

H₀: Women do not significantly participate in agricultural decision-making compared to men.

H₁: Women significantly participate in agricultural decision-making compared to men.

Table 2: Contribution of Women in Decision-Making

Decision Area	Solely Women (%)	Joint (Women + Men) (%)	Solely Men (%)
Choice of Crops	22	51	27
Sale of Produce	18	46	36
Use of Income	15	49	36
Livestock Management	37	42	21

One-way ANOVA ($F = 5.32$, $p < 0.05$).

The ANOVA results show that women's decision-making power varies significantly across agricultural domains, resulting in rejection of the null hypothesis.

Their influence is strongest in livestock management but weaker in income allocation and sales decisions. This indicates that women's autonomy is still restricted in financial matters despite their growing role in farm management.

Objective 2: To identify the key challenges faced by women in agriculture and explore opportunities for empowerment

H₀:

Women do not face significant challenges in accessing agricultural resources.

H₁:

Women face significant challenges in accessing agricultural resources

Table 3: Challenges Faced by Women in Agriculture

Challenge Category	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)
Lack of Land Ownership	49	34	10	7
Limited Credit Access	52	30	12	6
Inadequate Training	41	36	15	8
Workload & Time Burden	55	31	8	6
Market Access Barriers	43	38	13	6

Weighted Mean & Chi-square ($\chi^2 = 22.95$, $p < 0.01$).

The analysis reveals that women face multiple systemic challenges, particularly landlessness, restricted credit access, and heavy workloads. The null hypothesis is rejected as the differences across challenge areas are statistically significant. These findings underline the necessity of targeted policy interventions to reduce structural inequalities.

H₀: Women do not significantly differ in their preference for empowerment opportunities.

H₁: Women significantly differ in their preference for empowerment opportunities.

Table 4: Preferred Empowerment Opportunities

Empowerment Opportunity	High Preference (%)	Moderate Preference (%)	Low Preference (%)
Training & Skill Development	64	28	8
Access to Credit/Loans	58	33	9
Land Ownership Rights	62	29	9
Women's Cooperative Formation	47	36	17
Government Support Schemes	53	34	13

Friedman Test ($\chi^2 = 19.62$, $df = 4$, $p < 0.01$).

The Friedman test indicates a significant difference in women's preferences for empowerment strategies, thus rejecting the null hypothesis. Training, land rights, and credit access emerged as top priorities, while cooperatives and government schemes ranked relatively lower. This demonstrates that women prefer direct, resource-based empowerment interventions over collective or state-driven mechanisms.

VI. RECOMMENDATIONS OF THE STUDY

1. Strengthen Access to Resources and Ownership Rights

Policies should prioritize granting women greater access to land ownership, agricultural credit, and input subsidies, ensuring their independent stake in production activities. Legal reforms and awareness campaigns can empower women to claim property and inheritance rights, reducing their dependence on male counterparts.

2. Capacity Building through Training and Technology

Tailored training programs in modern farming techniques, allied activities, and digital tools should be introduced to enhance productivity and decision-making skills among women farmers. Technology-driven interventions, such as mobile-based advisories and skill workshops, can bridge the knowledge gap and promote sustainable livelihoods.

3. Institutional Support and Inclusive Policy Frameworks

Formation of women-centric cooperatives, self-help groups, and producer organizations should be encouraged to improve collective bargaining power and market access. Government schemes and extension services must be redesigned to include gender-sensitive approaches, ensuring that women receive equitable opportunities for growth and empowerment.

VII. CONCLUSION

The study highlights the indispensable role of women in agriculture and allied activities, revealing both the depth of their contributions and the multifaceted challenges they encounter. Women in Coimbatore district are actively engaged in crop cultivation, dairy farming, horticulture, and livestock management, often serving as the backbone of rural household economies. Despite their substantial involvement, their participation remains largely under-recognized and under-supported, particularly in domains such as decision-making, access to resources, and market engagement.

The findings confirm that systemic barriers—most notably lack of land ownership, restricted access to credit, limited training opportunities, and heavy time burdens—constrain women's ability to fully realize their potential in agriculture. At the same time, the analysis underscores women's strong preference for empowerment pathways rooted in resource accessibility, skills development, and institutional support. These insights not only reinforce the urgent need for gender-sensitive agricultural policies but also emphasize the importance of inclusive frameworks that acknowledge women as equal partners in rural development.

By integrating women more effectively into the agricultural value chain through targeted training, ownership rights, and cooperative structures, both productivity and socio-economic equity can be enhanced. Thus, the study concludes that women's empowerment in agriculture is not merely a matter of social justice but a strategic imperative for sustainable rural development. Strengthening women's agency, reducing institutional barriers, and creating opportunities for capacity building will ensure that agriculture evolves into a more equitable and

productive sector, ultimately contributing to the broader goals of food security and inclusive growth.

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