



Women Participation in Agricultural Extension Programmes in India

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Women play a crucial role in Indian agriculture, contributing significantly to crop production, livestock management, post-harvest operations and household food security. Despite their substantial involvement, women farmers continue to face multiple socio-economic and institutional barriers, including limited access to land ownership, credit, agricultural technologies, training and extension services. Agricultural extension programmes are essential for transferring knowledge, improving productivity and strengthening rural livelihoods; however, these services have traditionally remained male-oriented, resulting in low participation of women farmers. Existing studies reveal that women's access to agricultural information, decision-making platforms and training opportunities remains inadequate due to factors such as illiteracy, gender bias, domestic workload and limited mobility. Nevertheless, women-focused and gender-sensitive extension interventions, including self-help groups (SHGs), Farmer Producer Organizations (FPOs), digital agriculture initiatives and government programmes such as DAY-NRLM and Mahila Kisan Sashaktikaran Pariyojana (MKSP), have shown positive impacts on women's empowerment, income generation and agricultural participation. The review highlights the growing feminization of agriculture in India and emphasizes the need for inclusive extension systems, institutional support and policy interventions to strengthen women's participation in agricultural development and decision-making processes.

Introduction

Agricultural extension programmes serve as critical mechanisms for bridging the gap between new technical knowledge and farmers' practices, with the primary objective of enhancing agricultural productivity and rural incomes (Saito and Spurling, 1992). These programmes contribute to increased agricultural productivity through targeted training, gender-sensitive outreach and participatory extension approaches that improve access to information, strengthen confidence and enhance decision-making in both household and farm operations (Babanveer Singh *et al.*, 2025). However, research and extension services have traditionally been designed with the assumption that farmers are predominantly men, despite women playing crucial roles in a wide range of agricultural activities. Women constitute the backbone of India's agricultural economy, with nearly 64.25% of the total female workforce engaged in agriculture compared to 37.11% of the male workforce. Over the years, the female work participation rate in India has almost doubled, increasing from 12.11% in 1971 to 25.50% in 2011, with nearly 96% of working women employed in the unorganized sector (Beevi *et al.*, 2018). Women, as farmers, agricultural labourers, and entrepreneurs, form an integral part of India's agricultural and rural economy (M. Patra *et al.*, 2018). The agricultural sector is also experiencing gradual feminization, as women increasingly assume greater

responsibility in agricultural production and participate more actively in agro-export activities (Panda *et al.*, 2025).

Women's contributions extend across the entire agricultural value chain, ranging from crop cultivation and agro-processing to household management, with more than half of the world's food being grown by women. In addition to their domestic and reproductive responsibilities, women actively participate in farm operations and the processing of agricultural products. Their involvement is especially significant in food processing, marketing, cash cropping, and animal husbandry, not only in terms of labour contribution but also in decision-making authority (Katrine A. Saito, 1990). Despite their substantial role in ensuring food security and agricultural productivity, women continue to face structural and cultural barriers that limit their empowerment. The need for women-focused extension services has therefore become increasingly important, as the delivery of Extension and Advisory Services has not benefited men and women farmers equally in rural areas. Although women are becoming more responsible for farm-related work, agricultural extension services and information regarding new technologies are still directed primarily towards men. Consequently, a significant gap persists between the support provided and the actual needs and demands of rural women (T. Jafry and R. Sulaiman V, 2013). Women farmers also face major constraints related to access to land, water, credit, agricultural inputs, technology, modern farming practices, extension services and education. Furthermore, rural women remain marginalized in terms of access to training, technology, and participation in decision-making platforms. Strengthening gender-inclusive extension systems can help bridge these disparities and contribute to improved farm productivity, better family nutrition and sustainable rural development. There is a broad consensus that women farmers require greater access to extension services, as improving their access to agricultural information, training and tools is essential for enhancing the overall reach and effectiveness of extension initiatives (C. Gale *et al.*, 2015).

Status of Women in Indian Agriculture

Women constitute a dominant force in Indian agriculture, with 76.6% of the entire female workforce engaged in agricultural operations compared to only 54.6% of the male workforce (S. Sakamma and K. Umesh, 2018). Women contribute approximately 75% of the labor required for agricultural operations (D. S. Nittur and N. S. Mugadur, 2024), while representing 24% of the workforce in the agricultural sector and 41.1% of the overall workforce (Monika Sharma, 2024). Despite this substantial participation, women agricultural workers account for 39.2% of the total agricultural workforce but continue to experience low levels of empowerment.

Women play multifaceted roles across various agricultural domains, including crop production, livestock management, horticulture and post-harvest operations (Ruchi Thakur, 2018). In crop production, women are actively involved in activities such as sowing, transplanting, manure application, weeding, thinning, gap filling, harvesting and grass cutting (B. Jhansi *et al.*, 2025). Their contribution to livestock management is particularly significant, as they perform labor-intensive tasks such as cleaning cattle sheds, feeding cattle, collecting fodder, caring for young animals and developing ethno-veterinary practices for the treatment of sick animals (Krishna M. Singh *et al.*, 2013). Women also dominate post-harvest activities, including picking, winnowing, drying grains, storage and grading.

Rural women participate in agricultural activities in three major capacities: as paid laborers, as cultivators working on their own land and as managers who supervise labor while also participating in post-harvest operations (Y. Kasal *et al.*, 2020). In addition to agricultural production, women act as managers of natural resources by collecting more than 28% of the total energy consumed in India in the form of firewood, much of which is sourced from forests, contributing significantly to the annual consumption of 140 million tonnes of firewood.

The process of feminization of agriculture has intensified in the post-liberalization period, primarily due to the migration of men from rural to urban areas, which has increased

women's participation in agricultural activities. However, this increased participation has not translated into empowerment, as women continue to face wage discrimination and exclusion from agricultural decision-making processes (Arghyadeep Das *et al.*, 2021). Women receive only 60% of the wages paid to male workers for performing identical work. Furthermore, prevailing cultural attitudes often discourage the consideration of women's opinions in agricultural decision-making and acting upon women's suggestions is frequently regarded as socially inappropriate (N. Bala, 2010).

Significant gender disparities also exist in land ownership patterns, where female land holdings account for only 10.5% of total holdings compared to 89.5% for males. Moreover, nearly 75% of women's holdings fall within the categories of marginal, small, and medium-sized plots. Although women make substantial economic contributions by ensuring efficiency and quality in agricultural operations, their labor often remains unrecognized as "economically active employment" in national accounts despite its critical importance for rural household well-being. The dual burden of domestic responsibilities and agricultural labor further creates serious challenges for women's health, well-being and overall development (B. Jhansi *et al.*, 2025).

Participation of Women in Agricultural Extension Programmes

Women's participation in agricultural extension programmes remains consistently low across different contexts despite their substantial contributions to agricultural production. In Ethiopia's Ankasha district, annual reports from 2011–2014 showed that women farmers' participation in training services was "nominal," with illiteracy identified as the major factor contributing to low participation, followed by poor mainstreaming of gender within the agricultural sector (Chalachew Tarekegne and Mulunesh Dessie, 2020). Similarly, a comprehensive systematic review of 2,665 articles, including data extraction from 111 studies, confirmed that women have "low access to agricultural information, and even less ability to enact on training or advice received, in comparison to male farmers" (Y. Nyberg *et al.*, 2025). These findings indicate persistent gender disparities in agricultural extension systems and access to knowledge resources. Several structural and institutional barriers further restrict women's engagement in extension services. Women farmers "rarely get extension services and have little contact with extension services organizations" because of factors such as male-dominated extension staff, domestic workload, limited mobility, and long distances to extension centers (Bayeta Gadissa Gemechu, 2023). The predominance of male extension practitioners creates additional challenges, as "most agricultural extension practitioners in many developing countries are men, and their services are often oriented and channelled to favour men farmers, thereby depriving women farmers of the essential agricultural extension services" (Johnson A. Adebayo and Steven H. Worth, 2024). Consequently, women remain marginalized in access to training, technology and decision-making opportunities despite their central role in agriculture. Although women actively participate in crop production, livestock management and aquaculture enterprises, their involvement is generally limited to "small scale producing mainly for household consumption" (Jirgi, A. J. *et al.*, 2020). Rural women continue to "form the backbone of agricultural labor" while remaining "marginalized in terms of access to training, technology and decision-making platforms" (Babanveer Singh *et al.*, 2025). In Nigeria, women contribute between "60–80 percent of labour force" in agriculture, yet they have "either no or minimal part in the decision-making process regarding agricultural development" (Yemisi I. Ogunlela *et al.*, 2009). This imbalance highlights the disconnect between women's labour contributions and their participation in agricultural governance and development processes. Despite these challenges, evidence from targeted interventions demonstrates that gender-sensitive extension programmes can produce positive outcomes. In Pakistan's Muzaffarabad district, all female farmers surveyed recognized female extension staff by name and face and expressed satisfaction with their activities, while 58% reported monthly income increases of more than 5000 rupees due to their participation in agricultural activities (Ammara Munir, 2016). Likewise, Nigeria's women-in-agriculture programme, established to address gender

gaps in extension services, “has been a huge success,” as women’s groups and NGOs have empowered rural women farmers with improved access to farm inputs and credit facilities (Yemisi I. Ogunlela *et al.*, 2009). These examples demonstrate the effectiveness of inclusive and women-focused extension strategies in improving participation and livelihoods.

The literature also reveals important research gaps concerning women’s participation in Self-Help Groups (SHGs), farmer producer organizations, skill development programmes, and technology adoption. Existing studies emphasize that “agricultural productivity can be improved if the gender gap between men and women was closed” and recommend that “women farmers should be involved in the decision-making processes and they should actively participate in the establishment of agricultural policies and programs”. Furthermore, effective interventions must address not only women’s individual capacities but also “the relations of women with men in the context and the gendered power dynamics” that sustain structural inequalities (Y. Nyberg *et al.*, 2025).

Government Initiatives for Women Farmers

The Deendayal Antyodaya Yojana–National Rural Livelihood Mission (DAY-NRLM) has emerged as a significant government initiative for women’s empowerment by promoting self-help groups (SHGs), financial inclusion, collective action and social capital formation among rural women (S. Jha and Dharminder Singh, 2025). Under DAY-NRLM, the Mahila Kisan Sashaktikaran Pariyojana (MKSP) operates alongside the Kudumbashree Mission group farming initiatives in Kerala, particularly targeting women farmers in Calicut district (Vidyavathi T.K. and S. Valarmathi, 2025). These initiatives aim to strengthen women’s participation in agriculture by improving access to education, training, financial support, agricultural technologies and decision-making processes (A. Mohapatra and M. Sethy, 2025). In recent years, digital agriculture and women empowerment programmes have further enhanced the role of women in agriculture through ICT-enabled interventions and capacity-building activities. Non-governmental organizations (NGOs) and ICT initiatives have played a crucial role in disseminating customized and timely agricultural information to farm women, thereby contributing to their multidimensional empowerment (Lalitha Navya Challa *et al.*, 2021). Similarly, post-liberalization agricultural policies have sought to reduce gender disparities through mechanisms such as Farmer Producer Organizations (FPOs), SHGs, microcredit schemes and collective farming practices, which have strengthened women’s financial and social empowerment (Brinda Balaji and Meenakshi Khandimath, 2024). Government programmes supporting women agripreneurs also provide handholding, technical assistance, skill development, and training opportunities (Sukhjinder Singh *et al.*, 2022).

Despite these advancements, several challenges persist. Significant information gaps remain regarding government schemes for women farmers, as many rural women are still unaware of the programmes available to them. Regional disparities also affect programme outcomes; for instance, women in South Karnataka have benefited more from government interventions than those in North Karnataka due to better access to markets and credit facilities (Brinda Balaji and Meenakshi Khandimath, 2024). Furthermore, existing literature provides limited evidence regarding women-oriented training programmes conducted through Krishi Vigyan Kendras (KVKs) and the specific contributions of Indian Council of Agricultural Research (ICAR) and State Agricultural Universities toward women farmer empowerment initiatives.

Conclusion

Women constitute the backbone of Indian agriculture and contribute extensively to agricultural production, livestock care, post-harvest management and rural livelihoods. However, despite their significant labour contribution, women farmers continue to remain marginalized in access to agricultural extension services, training, technologies, financial resources and decision-making opportunities. Gender inequalities, limited land ownership, wage discrimination, socio-cultural restrictions and inadequate institutional support continue

to hinder their empowerment and active participation in agricultural development programmes. Although several government initiatives and women-focused interventions, such as SHGs, FPOs, ICT-enabled programmes, DAY-NRLM and MKSP, have improved women's access to resources and livelihood opportunities, substantial gaps still persist in awareness, outreach and effective implementation. Strengthening gender-sensitive agricultural extension systems, increasing the participation of women in policy and decision-making processes and ensuring equitable access to education, training, technology and financial services are essential for achieving sustainable agricultural development and rural empowerment. Future research and policy efforts should also focus on enhancing women's participation in extension programmes through institutions such as KVKs, ICAR and State Agricultural Universities to ensure inclusive and resilient agricultural growth in India.

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