International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

"GENDER IN AGRICULTURE EMPOWERING WOMEN FARMER"

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Abstract:
Gender equity in agriculture remains a pressing issue, not simply because it is ethically important, but because inequality continues to shape how rural economies actually function. In many low- and middle-income countries, women make up a large share of the agricultural workforce—often between 30 and 50 percent, depending on the region. They are deeply involved in every stage of farming: planting and harvesting crops, caring for livestock, selecting and saving seeds, processing food after harvest, and selling produce in local markets. In several parts of South Asia and Sub-Saharan Africa, male out-migration has increased this responsibility even further, leaving women to manage farms while also sustaining their households. Yet despite carrying so much of the workload, women farmers often remain on the margins when it comes to recognition and support. Many do not have secure rights to the land they cultivate. Without land titles, accessing formal credit becomes difficult because they lack acceptable collateral. Agricultural extension services frequently overlook them, and entry into profitable markets can be restricted by both institutional barriers and social expectations. These challenges are reinforced by norms that place men at the center of decision-making, whether within the household or in community institutions. As a result, women's contributions are not only undervalued but systematically constrained. The problem is compounded by how agricultural work is recorded and understood. Official statistics and land documents often list men as the primary farmers, even when women contribute equal or greater labor. When women are invisible in the data, they are easily overlooked in policy. Programs designed for "farmers" may unintentionally exclude women if participation depends on land ownership or membership in male-dominated cooperatives. In this way, well-intentioned development efforts can end up reinforcing the very hierarchies they aim to change. This makes it clear that gender inequality in agriculture is not just about who has resources, but also about how institutions are structured, how norms operate, and how agricultural labor itself is defined and measured. Against this backdrop, this article places the empowerment of women farmers at the heart of rural transformation. Drawing on research published between 2020 and 2023 across agricultural economics, gender studies, rural sociology, and development policy, it brings together current thinking and recent evidence. Today, empowerment is no longer understood simply as access to income or inputs. It is increasingly seen as the ability to exercise agency, make meaningful choices, and influence decisions that shape one's life. Secure land rights, access to finance, digital tools, climate-resilient technologies, and participation in self-help groups or producer organizations all matter. At the same time, scholars caution that boosting productivity alone will not solve deeper inequalities if household power dynamics and social norms remain unchanged. For that reason, this article takes a critical look at existing frameworks, questioning how empowerment is defined, measured, and translated into policy. A key idea running through the analysis is that empowerment has many layers. It includes economic elements such as owning assets, earning income, and participating in markets. It also has social dimensions, like freedom of movement, access to education, and the confidence to challenge restrictive norms. Political empowerment involves having a

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voice in local governance and agricultural decision-making bodies. Psychological empowerment speaks to self-belief, aspirations, and the sense that one's choices matter. These dimensions are interconnected. Progress in one area can strengthen others, but sustainable change usually requires attention to all of them. Economic support alone is rarely enough; it needs to be combined with institutional reform and shifts in social attitudes. The article also connects this discussion to the Sustainable Development Goals, particularly Goal 5 on gender equality and Goal 2 on zero hunger. Gender equity in agriculture has direct implications for food security, nutrition, poverty reduction, and climate resilience. Research consistently shows that when women have greater control over income and assets, families tend to spend more on health, education, and nutritious food. The benefits often extend to the next generation. In addition, women farmers have shown strong leadership in adopting sustainable farming practices, protecting biodiversity, and diversifying crops, all of which support environmental sustainability. Seen in this light, empowering women in agriculture is not a side issue—it is central to building inclusive and resilient rural economies. Ultimately, the review makes a clear case: empowering women farmers is both the right thing to do and the smart thing to do. Gender equality in agriculture should not be treated as a secondary social concern but as a foundation for productivity, resilience, and long-term transformation. By engaging critically with recent research and policy debates, the article moves beyond broad commitments and focuses on practical pathways for change. Sustainable agricultural futures will depend on dismantling structural barriers, strengthening institutional accountability, and recognizing women not merely as beneficiaries of development programs, but as key actors shaping rural economies and communities.

Keywords: Gender, Agriculture, Women Farmers, Empowerment, Rural Development, Gender Inequality, Gender Mainstreaming, Sustainable Development, Gender Policy.

INTRODUCTION

Agriculture continues to be the lifeline of rural economies across much of the world. For millions of families, it is not just a source of income but the foundation of food security, stability, and everyday survival. Within this landscape, women play an essential and often central role. They grow crops, care for livestock, process food, manage household nutrition, and contribute significantly to local markets. Yet, despite how much they do, women farmers regularly face structural barriers that limit their access to land, credit, technology, training, and decision-making spaces. This creates a striking contradiction: women contribute enormously to agriculture, but they remain among the least empowered within the system. That imbalance affects not only individual women but also the overall performance and resilience of rural economies.

When we talk about gender in agriculture, we are not simply referring to biological differences between men and women. We are looking at the social rules and expectations that shape who does what, who owns what, and who gets to decide. These roles and power dynamics vary across cultures and regions, but they consistently influence how labor is divided, which crops are grown, who controls income, and who has access to resources. In many places, these inequalities are embedded in laws, customs, and institutional practices. Women may have less access to education, extension services, credit facilities, or modern agricultural tools. Because of this, improving agricultural productivity and rural livelihoods cannot be separated from addressing gender inequality. It is not only a matter of fairness; it is also an economic necessity.

Empowering women farmers means more than simply increasing their income. It involves strengthening their ability to make decisions, access resources, and influence outcomes that shape their lives. Empowerment operates on many levels. Economically, it includes control over assets and earnings. Socially, it relates to mobility, recognition, and freedom from restrictive norms. Politically, it involves

participation in community institutions and governance. Psychologically, it includes confidence, self-belief, and aspirations. These dimensions interact with one another and require action not just at the individual level, but also within households, communities, and broader institutions. In recent years, both researchers and policymakers have paid greater attention to gender mainstreaming in agricultural development and to finding better ways to measure women's agency. Even so, important gaps remain in how empowerment is defined, implemented, and evaluated.

Across Asia, Africa, and Latin America, agriculture continues to shape the social and economic fabric of rural life. For many households, farming is not simply a job; it is a complex livelihood system that combines crop production, livestock rearing, natural resource management, and small-scale trade. Women are deeply involved in every stage of this process. They prepare land, sow seeds, transplant seedlings, weed fields, harvest crops, process produce after harvest, and preserve seeds for future seasons, and sell goods in local markets. In livestock systems, women often manage poultry, dairy cattle, and small ruminants, directly contributing to household nutrition and additional income. They also oversee food preparation, storage, and distribution within the family, influencing diet quality and overall health.

Despite this broad and continuous involvement, women farmers are frequently overlooked in official records and policy discussions. Agricultural identity is often linked to male household heads, even when women are doing much of the work. This gap between contribution and recognition reinforces a system where women are indispensable to productivity but sidelined when it comes to ownership, institutional support, and authority. The consequences go beyond individual disadvantage. When half the agricultural workforce lacks equal access to resources and decision-making, the entire agrarian system becomes less efficient and less sustainable.

To truly understand gender in agriculture, we need to look closely at how power operates. Gender norms shape who performs certain tasks, who controls income from crop sales, who holds land titles, and who represents the household in cooperatives or village meetings. These norms are not fixed; they are shaped by history, culture, and economic change. In some communities, women dominate subsistence farming while men concentrate on commercial crops. In others, when agriculture becomes more profitable, men may take control of enterprises that women previously managed. Legal systems and customary laws further complicate the picture. In many societies, inheritance practices favor male heirs, limiting women's independent access to land. Financial institutions often require land titles as collateral, effectively excluding women from formal credit systems. Extension services may target "farmers" in ways that assume the farmer is male, reinforcing institutional bias.

These overlapping barriers create a cycle of disadvantage that restricts women's productivity and autonomy. Addressing such inequities is not just about correcting injustice. Research consistently shows that when women have equal access to land, credit, inputs, and information, agricultural output rises, food security improves, and rural economies grow stronger. Closing the gender gap in agriculture, therefore, is both a moral responsibility and a practical strategy for sustainable development.

The idea of empowerment offers a practical way to respond to the deep-rooted challenges women farmers face. At its core, empowerment is about expanding women's ability to make meaningful choices in situations where those choices were once limited or denied. It certainly includes access to land, credit, technology, and information—but it goes well beyond that. Empowerment is also about having a voice, being recognized as a farmer in one's own right, and having the confidence and authority to influence decisions.

Economic empowerment allows women to earn and control income, invest in assets, and diversify their livelihoods. Social empowerment builds confidence, expands mobility, and encourages participation in groups and community networks. Political empowerment opens doors to leadership roles and representation in local governance and policy discussions. Psychological empowerment strengthens self-belief and the sense that one's actions can shape outcomes. These dimensions are closely connected. For instance, when a woman gains secure access to land, she may increase her income, which can improve her bargaining power at home and encourage her to take on leadership roles in the community. At the same time, if social norms and institutional practices remain unchanged, even significant economic gains may not lead to lasting empowerment. Without broader shifts in attitudes and systems, progress can stall.

In recent years, discussions in academia and policy circles have increasingly focused on gender mainstreaming within agricultural development. Rather than treating women's issues as an add-on, gender mainstreaming aims to weave gender considerations into every stage of planning, implementation, monitoring, and evaluation. Governments, international organizations, and research institutions have introduced gender-responsive strategies designed to close gaps in land ownership, access to extension services, financial inclusion, and market participation. New measurement tools, including empowerment indices, attempt to capture progress across different domains of women's lives.

Even so, defining and measuring empowerment remains complex. Scholars continue to debate how best to assess changes within households, where decision-making power is often subtle and negotiated. There are also challenges in accounting for intersecting identities such as caste, class, ethnicity, and age, which shape how empowerment is experienced. Measuring long-term, transformative change is far more difficult than tracking short-term project outcomes. On top of this, implementation gaps persist. Policy commitments do not always come with sufficient funding, trained personnel, or accountability systems. As a result, strong policy language does not always translate into meaningful change on the ground.

This article positions itself within this evolving conversation. The shift is clear: earlier approaches often focused on welfare and basic inclusion, while more recent frameworks emphasize rights, agency, and structural reform. By bringing together theoretical insights, empirical evidence, and policy initiatives, the article offers a comprehensive view of how gender inequalities in agriculture are created and sustained—and how they might be dismantled.

It also explores how gender intersects with broader issues such as climate change, nutrition, and market integration. Women farmers are not only affected by these forces; they are key actors in responding to them. Understanding these connections is essential for designing policies that are both equitable and sustainable. Ultimately, the article aims to move beyond abstract commitments and toward practical, systemic change. Empowering women farmers is not simply about improving individual outcomes; it is about reshaping institutions and transforming agricultural systems so that they are inclusive, resilient, and just.

This article examines the evolution of gender discourse in agriculture, reviews contemporary literature on women's empowerment; analyses key conceptual frameworks, and identifies pathways for transformative action.

REVIEW OF RELATED LITERATURE

A major influence in today's discussions on gender and agriculture is the work of Agarwal, B. (2020), who brings land rights back to the center of the conversation. She argues that land is far more than just a productive asset. In rural societies, it represents security, social status, bargaining power within the family, and even political voice. Land ownership often determines who can access bank credit, qualify for government subsidies, join farmer cooperatives, or be officially recognized as a "farmer." When

women do not have independent and legally recognized rights to land, they are effectively shut out of these systems. Agarwal makes a strong case for joint land titles, reforms in inheritance laws, and group farming arrangements as practical ways to strengthen women's position both at home and in the community. She also highlights the power of collective action—women's farming groups and cooperatives can help members overcome limitations of small landholdings and negotiate better access to markets and state support. Importantly, her work moves beyond welfare-based approaches and argues that gender justice must be built into the foundations of agrarian reform, rather than added as an afterthought.

While Agarwal focuses on structural change, Kabeer, N. (2020) offers a deeper conceptual lens for understanding empowerment itself. She frames empowerment around three connected elements: resources, agency, and achievements. Resources include not only tangible assets like land and credit, but also education, skills, and social networks. Agency refers to the ability to define goals and act on them—whether that means making household decisions, negotiating with others, or challenging restrictive norms. Achievements are the outcomes that result, such as improved income, greater well-being, or stronger social recognition. Kabeer emphasizes that empowerment is not a fixed state; it is a dynamic process shaped by power relations within families, markets, and institutions. In agriculture, this means that simply providing women with training or farm inputs does not guarantee empowerment. Unless women also gain control over decisions and benefits, real change remains limited. Her framework has influenced researchers to look beyond participation statistics and focus instead on shifts in autonomy and power.

Efforts to measure empowerment more systematically have advanced through the Women's Empowerment in Agriculture Index (WEAI), developed and refined by Sabina Alkire and colleagues (2021). The index assesses empowerment across several areas, including decision-making in production, access to resources, control over income, leadership in community groups, and time use. Studies using the WEAI in regions such as Sub-Saharan Africa and South Asia consistently show gender gaps, particularly in asset ownership and decision-making authority. Women may contribute heavily to farm labor, yet still lack the final say on what crops to grow or how income is spent. The WEAI has been valuable for policymakers because it offers a standardized way to track progress and compare outcomes across regions. At the same time, critics point out that empowerment is deeply shaped by local culture and context, and standardized indicators may miss subtler forms of influence or culturally specific expressions of agency. Even so, the index has played a crucial role in making empowerment visible and measurable in policy debates.

Building on these measurement concerns, Seymour, Malapit, and Quisumbing (2020) draw attention to an often overlooked factor: time. Their research shows that women's heavy responsibility for unpaid care and domestic work limits their ability to attend training sessions, participate in leadership roles, or engage fully in markets. This "time poverty" can prevent women from adopting new technologies or joining collective initiatives. When empowerment is measured without considering time burdens, an important piece of the picture is missing. Their work also raises a caution: development programs that expand women's agricultural roles without addressing unpaid care work may unintentionally increase workload without improving autonomy. Real empowerment, therefore, requires not only access to assets but also a fairer distribution of labor within households.

The literature also challenges some common assumptions about women in agriculture. Doss, Meinzen-Dick, Quisumbing, and Theis (2020) take a critical look at widely repeated claims, such as the idea that women produce the majority of the world's food or that equal access to inputs would automatically close productivity gaps. Their careful review shows that women's participation varies widely depending on region, crop type, and local context. Productivity differences are shaped by many factors, including land

quality, access to inputs and extension services, and prevailing social norms. They caution against oversimplified narratives that can lead to poorly designed policies. For example, providing equal amounts of fertilizer or seeds will not necessarily produce equal results if women lack secure land rights, reliable market access, or decision-making authority. By questioning these myths, the authors advocate for more nuanced, evidence-based approaches that take structural and contextual realities seriously.

In a related discussion, Cheryl Doss (2022) takes a fresh look at the long-standing debate about women's land rights and agricultural productivity. Rather than treating land ownership as a simple variable that automatically increases output, she explores the deeper question of what secure tenure actually means for women. Her argument is that land rights matter not just because women directly control a plot of land, but because secure and socially recognized rights reshape incentives, investment decisions, and power dynamics within households. When women know that their rights to land are legally protected and respected by their communities, they are far more willing to invest in long-term improvements such as soil conservation, irrigation systems, or land rehabilitation. These are investments that pay off over time, and women are unlikely to commit to them if their claim to the land is uncertain. Secure tenure also strengthens their credibility in financial markets, making it easier to access credit and insurance. Beyond economic returns, Doss emphasizes that land rights contribute to resilience. Women with secure tenure are better equipped to cope with economic shocks, climate-related stress, or family crises. Ownership improves their fallback position within marriage and family structures, giving them greater influence over decisions about farming, household spending, and children's well-being. In this sense, land rights function both as an economic resource and as a powerful tool of social empowerment.

Scholars have also paid close attention to women's access to productive inputs beyond land. Peterman, Seymour, and Quisumbing (2020) provide a detailed account of gender gaps in access to fertilizers, improved seeds, livestock services, irrigation, and formal financial services. Their findings make it clear that these disparities are not simply about individual effort or skill. Instead, they are rooted in institutional arrangements and socio-cultural norms. Women often lack the collateral needed to secure loans. They may be excluded from cooperatives that distribute subsidized inputs. Extension agents visit them less frequently than male farmers. In many rural contexts, norms around mobility restrict women's ability to travel to markets or input centers. Over time, these barriers accumulate and create a productivity gap that cannot fairly be blamed on inefficiency. The authors caution against policy approaches that assume information alone will solve the problem. Without addressing structural discrimination and systemic bias, inequalities are likely to persist.

Additional evidence of gender bias within agricultural services comes from Moagi and Oladele (2022), who examine the functioning of extension systems. They find that many programs are designed around the assumption that the "household head" is male. As a result, training sessions and advisory services often target men, even in contexts where women carry out a substantial share of agricultural work. Practical barriers also exist. Training may be scheduled at times that conflict with women's domestic responsibilities and extension agents may not receive adequate gender-sensitivity training. This leaves women with limited access to information about improved farming practices, pest control, climate adaptation, or market opportunities. The resulting information gap restricts their ability to innovate and respond to changing conditions. The authors argue that making extension services truly gender-responsive requires more than minor adjustments. It calls for institutional reforms such as recruiting more female extension agents, offering flexible training schedules, and adopting participatory approaches that recognize women as farmers in their own right rather than as helpers to male relatives.

The issue of technology access is explored further by Ragasa (2021), who focuses on gender and agricultural mechanization. Mechanization is often celebrated as a driver of productivity and labor efficiency, but its benefits are not evenly shared. Ragasa shows that labor-saving technologies like

tractors, threshers, and irrigation pumps frequently remain out of reach for women. Financial constraints, limited access to credit, and the widespread belief that machinery is "men's work" all contribute to this exclusion. In some cases, mechanization has even displaced women from income-generating activities without creating alternative opportunities. The broader message is that technology is not inherently neutral. If inclusion is not deliberately built into policy and program design, technological change can reinforce or even deepen existing inequalities. Expanding women's access to mechanization therefore requires financial inclusion, targeted skill development, and efforts to challenge deeply rooted gender stereotypes.

At the institutional level, international organizations have increasingly acknowledged these structural challenges. The Food and Agriculture Organization's Gender Action Plan (2022–2025) signals a strategic commitment to integrating gender considerations across agrifood systems. Its recent publication, The Status of Women in Agrifood Systems (2023), offers a comprehensive assessment of gender inequalities across value chains, rural employment, entrepreneurship, and governance. The report documents persistent gaps in land ownership, wage equality, leadership representation, and access to climate adaptation resources. Importantly, it also estimates the economic cost of these inequalities, arguing that narrowing productivity and wage gaps could significantly boost global GDP and strengthen food security. The emphasis on gender-responsive budgeting and stronger institutional capacity suggests a move away from symbolic commitments toward measurable accountability.

Similar concerns are reflected in analyses from the World Bank. The Women, Business and the Law 2022 report highlights how discriminatory legal frameworks continue to restrict women's property rights, inheritance claims, and entrepreneurial activities in many countries. Even where statutory law guarantees equality, customary practices often undermine women's actual control over land and assets. A 2023 World Bank background paper on transforming agriculture through women's empowerment further argues that removing legal barriers and investing in women farmers could substantially increase agricultural output and reduce poverty. In this framing, gender equality is not only a question of fairness or rights; it is also a sound macroeconomic strategy with tangible growth and development benefits.

Adding to these broader, policy-level discussions, the International Fund for Agricultural Development (2021) draws attention to how exposed rural women are to climate shocks, food shortages, and unpredictable markets. Its analysis makes it clear that women are often on the frontlines of crisis, yet they have the fewest resources to fall back on. The organization stresses the importance of inclusive rural finance systems, stronger social protection programs, and community-based groups that can help women build resilience over time. In a similar vein, the International Labour Organization (2022) highlights the reality that many rural women work in informal conditions, where wages are low, job security is weak, and protections such as maternity benefits and social security are either limited or entirely absent. These vulnerabilities add another layer to the productivity and asset gaps already documented in academic research. Taken together, they show that empowering women in agriculture cannot stop at improving farm-level inputs. It must also address labor rights, legal protections, and access to social safety nets.

In recent years, research on gender in agriculture has widened its lens. Instead of focusing only on access to land or fertilizer, scholars are increasingly examining how global challenges—especially climate change—interact with women's roles in rural economies. Jost et al. (2020) explore how adaptation strategies are shaped by gender differences in access to information, assets, and institutional support. Their findings show that women often receive climate-related advisories later than men, or sometimes not at all. This happens because they are less connected to extension systems, may have lower literacy levels, and often face mobility restrictions. Climate-resilient tools such as drought-resistant seeds, irrigation technologies, or weather-indexed insurance are typically distributed through

channels that primarily reach male farmers. As a result, women are left with fewer options to adapt and greater exposure to risk. The authors argue that climate policies must take seriously the power relations within households and communities. When women are excluded from decision-making, the adoption and effectiveness of climate-resilient practices suffer. Without intentional inclusion, well-meaning climate initiatives can unintentionally reinforce the very inequalities they aim to reduce.
Rao *et al.* (2020) deepen this conversation by examining communities facing environmental stress such as drought, soil degradation, and erratic rainfall. Their research shows that women's limited control over assets and income makes it harder for them to respond effectively when crises hit. During crop failures, for example, women may not have the authority to diversify into alternative livelihoods, seek paid work elsewhere, or access emergency loans. At the same time, environmental stress often increases women's unpaid workload. They may have to walk longer distances to collect water or fuelwood, or compensate for shrinking household resources through additional labor. Over time, this cumulative burden intensifies gender inequalities and undermines resilience. Rao and colleagues therefore argue that resilience-building efforts must combine social protection measures, gender-sensitive infrastructure, and participatory planning processes that actively include women's voices in climate governance.

The relationship between gender, nutrition, and climate-smart agriculture is explored by Beuchelt and Badstue (2020), who point out that productivity gains do not automatically translate into better nutrition. Climate-smart agriculture is often promoted as a way to increase yields while protecting the environment, but its benefits within households depend heavily on who controls production decisions and income. In many contexts, men manage cash crops and control the earnings from market sales. Even if productivity rises, the additional income may not lead to improved dietary diversity or better outcomes for children if women have little say in how money is spent. By contrast, when women retain control over subsistence crops or small livestock, improvements in food security and family nutrition are more likely. The authors argue that climate-smart initiatives must go beyond technical solutions and incorporate gender-transformative strategies that strengthen women's decision-making power. Only then can gains in productivity align with meaningful improvements in household well-being.

Evidence from livestock systems reinforces this link between empowerment and food security. Galiè *et al.* (2021) find that when women have recognized ownership and control over livestock assets and the income they generate, household dietary diversity and nutritional outcomes improve. In many regions, women traditionally manage poultry, dairy animals, and small ruminants, making livestock an important entry point for economic participation. When women control these assets, they are more likely to direct resources toward food, healthcare, and education. However, the study also notes a potential risk: as livestock production becomes more commercial and profitable, men may take over control of the enterprise. This shift can sideline women from sectors they once dominated. The findings highlight the need to protect women's rights and agency as value chains modernize and profits increase.

Research on value chains and market integration further illustrates the structural nature of gender inequality. Njuki and Sanginga (2020) observe that women are often concentrated in lower-value segments of agricultural value chains, such as small-scale production, low-margin processing, or informal trading. Barriers such as limited access to capital, exclusion from producer organizations, weak access to market information, and social norms restricting mobility make it difficult for women to move into higher-value roles like aggregation, export marketing, or contract farming. Even when women participate in commercial agriculture, they may not retain control over profits. Income from lucrative crops can be appropriated by male household members, limiting the empowerment potential of market participation. The authors emphasize that integrating women into value chains requires more than technical training or productivity enhancement. It calls for institutional reforms that ensure fair contracts, accessible finance, collective bargaining mechanisms, and protection against exploitative labor conditions.

Global agricultural markets have evolved in ways that create new and often less visible forms of inequality—ones that go far beyond what happens on the farm. Oxfam (2021) takes a critical look at global supply chains and shows how the growing concentration of power in the hands of a few large corporations—especially in input supply, processing, and retail—shapes deeply uneven market relationships. These corporations frequently set prices and contract terms that small-scale farmers have little choice but to accept. Within these chains, women tend to occupy the most insecure positions. They are often found in seasonal fieldwork, informal processing jobs, or low-paid packaging roles. Much of this work is informal, meaning it comes without written contracts, social security, or basic labor protections. As a result, women face lower wages, occupational segregation, and a heightened risk of exploitation. Weak labor law enforcement and limited union representation further intensify these vulnerabilities. Oxfam argues that simply helping women produce more on their farms is not enough. If the broader market system remains unequal, women will continue to capture only a small share of the value they help create. Real empowerment, therefore, requires changes in market governance, stronger labor rights, fair trade standards, and corporate accountability.

In response to these structural barriers, scholars have increasingly focused on innovation systems and participatory approaches as pathways for deeper transformation. Quisumbing et al. (2021) argue that agricultural innovation systems must be intentionally designed to include women's perspectives at every stage—from research design and technology development to policy formulation. Too often, innovation systems have been shaped around male farmers' priorities, producing technologies that do not reflect women's realities or constraints. By drawing on women's lived experiences, addressing gender-specific barriers, and promoting women's leadership in research institutions and producer organizations, innovation systems can become more inclusive. The authors make it clear that gender responsiveness is not about tweaking extension messages at the margins. It involves rethinking institutional cultures, funding priorities, and accountability mechanisms so that women's needs and aspirations genuinely shape agricultural transformation.

Participatory agro ecology offers a vivid example of how inclusive innovation can work in practice. Kerr *et al.* (2021) show that when farmers engage in collaborative experimentation, knowledge exchange, and collective decision-making, women gain space to speak, lead, and influence community practices. Unlike top-down technological models, participatory agro ecology values local knowledge and shared learning. This approach can disrupt traditional hierarchies that often sideline women. Many women involved in such initiatives report greater confidence, stronger social networks, and increased respect within their communities. At the same time, agro ecology's focus on biodiversity, soil health, and sustainable resource management often resonates with women's established roles in household food production and environmental care. In this way, ecological sustainability and gender equity reinforce one another rather than competing for attention.

Digital technologies have also entered the conversation as potential tools for narrowing gender gaps. Huyer (2020) points out that mobile-based extension services, digital marketplaces, and climate information systems can expand women's access to knowledge, finance, and markets. By reducing the need for travel and lowering transaction costs, digital platforms can help women overcome geographic and social barriers. However, she also warns against assuming that technology is automatically inclusive. Gaps in literacy, education, smartphone ownership, and internet connectivity often mirror existing gender inequalities. Without targeted efforts to improve digital literacy, make devices affordable, and design user-friendly platforms, digital innovation can end up widening the divide. Digital inclusion must therefore be part of a broader strategy to strengthen women's capabilities and agency.

Development agencies have increasingly embedded gender equality into their agricultural strategies, reinforcing the idea that empowerment is both a moral and developmental priority. UN Women (2022)

frames sustainable agriculture as a powerful pathway to women's economic empowerment. The organization argues that investing in women's agricultural enterprises generates ripple effects for household well-being and community development. By linking women's economic participation to sustainability and climate resilience, UN Women situates gender equality at the heart of global development goals. Similarly, USAID (2021) emphasizes the importance of integrating gender analysis into every stage of agricultural programming—from project design to evaluation. Its framework calls for accountability systems, gender-disaggregated data, and inclusive stakeholder engagement to ensure that interventions address structural inequalities rather than treating women as a uniform category of beneficiaries.

At the grassroots level, CARE International (2021) provides practical examples of how economic empowerment can be combined with efforts to transform social norms. Its community-based programs typically link savings groups, vocational training, and market access with facilitated dialogues about gender roles, decision-making, and shared household responsibilities. Evidence suggests that income gains are more sustainable when accompanied by shifts in power relations within households. When men and community leaders are included in conversations about gender equity, resistance to women's leadership often declines. CARE's approach highlights an important lesson: providing resources alone is not enough if restrictive norms remain unchallenged. Lasting empowerment requires both material support and changes in the social rules that govern daily life.

Taken together, this body of research makes it clear that empowerment is not simply about increasing the number of women participating in agriculture. It is about transforming the structural inequalities that shape agrarian systems. Across studies and policy analyses, certain patterns consistently emerge. Secure land rights strengthen women's agency. Access to inputs and extension services boosts productivity. Collective action enhances bargaining power. Gender-transformative approaches that confront social norms lead to more durable change. Yet progress remains uneven. Discriminatory laws, unpaid care responsibilities, climate risks, and unequal market structures continue to limit women's opportunities.

Overall, recent scholarship presents gender in agriculture as a complex interaction of resources, institutions, and power. Empowerment is increasingly understood as multidimensional and shaped by context. It requires coordinated strategies that connect policy reform, institutional change, and grassroots mobilization. The literature leaves little doubt that empowering women farmers is central to inclusive agricultural growth, food security, and sustainable development. At the same time, it underscores the need for continued research—particularly on intersectionality, long-term impacts, and the mechanisms that drive truly transformative change.

OBJECTIVES

The overarching aim of this research article is to synthesize and critically examine conceptual frameworks, empirical evidence, and policy discourse on gender and empowerment in agriculture. Specific objectives include:

1. To elucidate key theoretical perspectives on gender inequities and their implications for women farmers.
2. To review empirical findings (2020–2023) on barriers to women's access to resources, agency, and empowerment outcomes in agricultural contexts.
3. To analyze how current policy frameworks address gender disparities and empowerment in agriculture.
4. To identify integrative pathways and recommendations for enhancing women's empowerment in agricultural systems.

RESEARCH METHODOLOGY

As a conceptual review article**,** the research employs qualitative synthesis of peer-reviewed literature, policy documents, and conceptual frameworks published from 2020 to 2023. The methodology involves comprehensive literature search in academic databases including Scopus, Web of Science, AGRICOLA, and Google Scholar, focusing on terms such as "gender in agriculture," "women farmers," "empowerment," "agricultural policy," and "gender mainstreaming."

Inclusion criteria were studies that explicitly address gender dynamics in agricultural settings, propose or evaluate empowerment frameworks, and contribute to theoretical or policy discourse. Excluded were articles outside the timeframe, studies with limited gender analysis, or those focused exclusively on non-agricultural sectors.

The analytical approach combined thematic synthesis and critical interpretation, enabling integration across disciplines and identification of conceptual linkages. Findings were organized around key themes: gendered barriers, empowerment dimensions, institutional frameworks, and policy implications.

FINDINGS OF THE STUDY

One of the most important developments in recent scholarship is the way empowerment itself is now understood. In earlier discussions, empowerment was often treated as synonymous with economic participation—if women earned income or joined the labor force, they were considered empowered. Today, that view feels far too narrow. Researchers increasingly describe empowerment as a multidimensional and deeply relational process. A widely used framework organizes it around three interconnected elements: resources, agency, and achievements. Resources include tangible assets such as land, credit, education, and technology. Agency refers to a woman's ability to make meaningful, strategic decisions. Achievements are the outcomes that result from exercising that agency. This framework has been influential because it helps explain how access to assets can translate into real change in women's lives.

At the same time, scholars have become more cautious about applying any single definition of empowerment across contexts. Power relations are embedded in social, cultural, and institutional settings, which means empowerment cannot be reduced to a universal checklist. Intersectional analysis has strengthened this critique. By examining how gender interacts with caste, race, ethnicity, class, age, marital status, and location, researchers show that women's experiences differ dramatically. A young, landless woman from a marginalized caste community may confront very different barriers than an older woman from a relatively secure household. These differences matter. They challenge one-size-fits-all policy solutions and reinforce the need for interventions that are sensitive to local realities.

Another consistent finding across the literature is the persistence of gender gaps in access to agricultural resources. Studies from multiple regions show that women typically own less land, farm smaller plots, and have less secure tenure than men. Because land titles are often required as collateral, limited ownership restricts women's ability to access institutional credit. Similar patterns appear in access to extension services, improved seeds, irrigation systems, and mechanized equipment. These gaps do more than reflect existing inequalities—they actively reinforce them. When women have fewer productive assets, their yields and incomes may be lower, which can perpetuate perceptions of dependency and weaken their bargaining position within households. Importantly, several studies highlight a strong link between secure land tenure and decision-making power. Women who hold documented land rights are more likely to invest in soil conservation, diversify crops, and adopt climate-resilient practices. Secure tenure encourages long-term planning and boosts confidence in engaging with community institutions. In this sense, access to resources carries both practical and symbolic weight.

Beyond assets, the literature repeatedly emphasizes the central role of agency and voice. Material resources matter, but empowerment ultimately hinges on the ability to make choices and shape outcomes. Agency can be seen in decisions about what crops to grow, how income is spent, whether children attend school, and whether women participate in cooperatives or local governance bodies. Women who exercise greater agency are more likely to experiment with new farming methods, negotiate better market terms, and engage in community leadership. Yet agency does not operate in a vacuum. Deeply rooted social norms often restrict women's mobility, limit their presence in public spaces, and confine them to subordinate roles within organizations. Even when women contribute substantial labor, leadership positions in cooperatives or irrigation associations may remain male-dominated. Income from high-value crops can be controlled by male household members, reducing women's influence over financial decisions. These realities show that simply providing assets is not enough. Without changes in attitudes, institutional practices, and household dynamics, improvements in resource access may not translate into genuine empowerment.

The review also reveals a steady rise in gender-sensitive policy frameworks in agriculture. Many governments now include gender mainstreaming in their agricultural development strategies, and international organizations promote gender-responsive budgeting, inclusive extension services, and monitoring systems that track women's participation. On paper, these commitments signal meaningful progress. In practice, however, implementation gaps are common. Monitoring systems are often weak, accountability mechanisms underdeveloped, and gender-disaggregated data incomplete. Extension services may lack personnel trained to address women's specific needs, such as limited time availability, lower literacy levels, or cultural restrictions. In many places, programs continue to target male "household heads," inadvertently sidelining women. These challenges highlight the importance of institutional capacity. Policy statements alone cannot drive change; they must be supported by sustained investment in training, staffing, and participatory evaluation systems.

Perhaps the most compelling insight from recent research is the effectiveness of holistic, gender-transformative approaches. Programs that focus narrowly on a single intervention—such as microcredit or subsidized inputs—often produce modest or short-lived gains. By contrast, integrated initiatives that combine economic support with skills training, collective organization, and efforts to shift social norms tend to generate more durable results. For example, pairing financial services with financial literacy training enables women to use credit strategically rather than simply accessing loans. Leadership training can strengthen public speaking skills and confidence, encouraging greater participation in local institutions. Community dialogues that involve both men and women create space to question traditional norms around decision-making and division of labor. Self-help groups and producer cooperatives enhance bargaining power in markets while fostering peer learning and solidarity. These approaches recognize that empowerment is not a simple, linear outcome. It is a transformative process that unfolds across economic, social, and cultural dimensions.

Taken together, the contemporary literature paints a complex picture of empowerment in agriculture. Theoretical clarity has improved, but debates about context and measurement continue. Resource inequalities remain entrenched, and agency is frequently constrained by social norms. Policy frameworks are expanding, yet implementation often lags behind ambition. Most importantly, the evidence suggests that meaningful empowerment emerges when structural barriers are confronted, agency is strengthened, and social norms are gradually transformed. Moving from rhetorical commitment to lasting change requires coordinated action across institutions, communities, and households. Only then can gender equity in agriculture shift from aspiration to sustainable reality.

At its core, empowerment goes far beyond visible economic participation. Earning an income or contributing labor to farming is important, but empowerment becomes truly meaningful when women

have the authority to decide how that income is spent, which crops are grown, how labor is divided, and how to engage with markets and institutions. The heart of empowerment lies in agency—the ability to make strategic choices in settings where those choices were once restricted. This includes having a voice in household decisions, representation in community bodies, and the confidence to influence agricultural policies that shape daily life. Just as importantly, empowerment involves reshaping the social norms that define gender roles and expectations. In many rural communities, women's work in agriculture is still seen as "helping," even when they shoulder a major share of farm responsibilities. Challenging these assumptions is essential if equality is to move from symbolism to substance.

The research also makes it clear that women's empowerment is deeply connected to broader development goals. When women farmers gain secure access to land, credit, and other productive resources—and when they control the income generated from their work—the benefits ripple outward. Studies consistently show links between women's economic agency and improved food security, better dietary diversity, stronger child nutrition, and greater investments in health and education. These outcomes reduce poverty and strengthen long-term human development. Women's engagement in climate-resilient agriculture and biodiversity conservation also contributes to environmental sustainability. In this way, gender equity in agriculture is not only a matter of fairness; it is a practical strategy for building resilient and thriving rural economies.

At the same time, the persistence of gender gaps shows that access to resources alone is not enough. Ensuring land tenure security, expanding credit, introducing labor-saving tools, and designing gender-responsive extension services are all critical steps. Yet they address only part of the problem. Power relations within households and communities often determine how those resources are actually used. A woman may receive a loan in her name but still need approval from male relatives to decide how to spend it. She may hold land rights on paper but lack real autonomy over cropping decisions because customary norms give men final authority. For this reason, lasting change requires engaging directly with the social norms that define authority, legitimacy, and status. Programs that include men and community leaders in conversations about shared decision-making and equitable labor distribution have shown greater promise in shifting entrenched hierarchies.

Institutions also play a decisive role in sustaining empowerment. Policies that claim to mainstream gender must be backed by concrete mechanisms. This means creating dedicated gender units within agricultural ministries, embedding gender-sensitive indicators in planning frameworks, and allocating real financial resources through gender-responsive budgeting. Reliable gender-disaggregated data are equally important. Without consistent data, women's contributions remain invisible, and policies risk missing their mark. Participatory policy processes that invite women farmers to share their experiences help ensure that programs reflect lived realities rather than top-down assumptions. Monitoring systems should look beyond simple productivity measures and include indicators of decision-making power, mobility, leadership participation, and bargaining strength within households.

Global frameworks such as the Sustainable Development Goals and international gender strategies provide a strong foundation for action. They articulate shared commitments to equity, inclusion, and sustainability. But turning these commitments into real change depends on how they are adapted locally. Cultural practices, farming systems, and institutional capacities differ widely, so strategies must be tailored to context. Grassroots leadership and community-based organizations are often the bridge between global goals and everyday practice. Women's self-help groups, cooperatives, and producer networks can become powerful platforms for collective voice, stronger bargaining power, and improved market access. At the same time, these groups must guard against reproducing internal hierarchies. Their governance structures need to be inclusive, and their external connections—to banks, extension services, and value chains—must be strong enough to translate collective effort into lasting gains.

Ultimately, making agriculture a genuinely equitable and empowering space for women requires a comprehensive and sustained approach. Economic resources matter, but so do social recognition and political participation. Empowerment is not a single milestone to be reached; it is an ongoing process shaped by negotiation, learning, and institutional support. As women's aspirations and capacities grow, the systems around them must also evolve. Sustainable empowerment calls for continuous policy attention, active community engagement, and openness to reflection and adaptation. When empowerment is understood as a dynamic and context-driven journey, it becomes possible to design interventions that not only increase productivity but also reshape rural societies in ways that foster dignity, equality, and long-term resilience.

CONCLUSION

Gender equity in agriculture sits at the heart of sustainable rural development, poverty reduction, and food security. Women contribute enormously to farming systems—often providing labor, managing crops, caring for livestock, and sustaining household food supplies. Yet despite this central role, structural barriers continue to limit their opportunities and decision-making power. Drawing on contemporary research from 2020 to 2023, this article underscores that empowerment is far more complex than simple economic participation. It is multidimensional, shaped by the interaction between access to resources and the ability to exercise agency, and deeply influenced by the policies and institutions that structure rural life.

Empowerment needs to be understood as both a personal and a collective journey. It involves transforming restrictive gender norms, ensuring fair access to land, credit, technology, and extension services, and creating genuine space for women to participate in decisions that affect their livelihoods. Policies that claim to support women in agriculture must be backed by strong data systems, gender-sensitive service delivery, and inclusive institutional frameworks that move beyond symbolic commitments. Looking ahead, research should pay closer attention to intersectional differences among women, track empowerment over time through longitudinal studies, and rigorously evaluate gender-transformative interventions. Ultimately, supporting women farmers is not only a matter of rights and justice; it is also a practical and strategic investment in building resilient, productive, and inclusive agricultural systems.

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