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Original Article

The Role of Gender Transformative Agro-ecological Interventions in Crop-Based Farming Systems in Tanzania: A Case of Muray Ward, Mbulu District

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This study investigates the role of gender-transformative agro-ecological interventions (GTAI) in crop-based farming systems in Muray Ward, Mbulu District, Tanzania, with particular focus on GTAI undertaken under the "Rural Women Cultivating Change" project. It highlights the importance of understanding gender dynamics to promote equality in agro-ecological practices. A qualitative research design was employed, utilising snowball sampling to engage 58 farmers (27 men and 31 women) through in-depth interviews and focus group discussions as well as direct observation. The objective was to explore the role of GTAI mainly on the gender division of labour, access to resources, and decision-making power among farmers. Findings reveal that while collective labour practices have improved, traditional gender roles persist, with women often burdened by household chores that limit their participation in farming. Decision-making remains predominantly male-dominated, despite some shifts towards shared responsibilities. Access to land is a critical factor influencing autonomy, with entrenched patriarchal norms still favouring male ownership. The study highlights the need for targeted educational initiatives to challenge these norms and promote equitable resource management. While GTAI is fostering inclusivity, significant barriers remain in achieving gender equity in agro-ecological farming practices. Therefore, sustained community education, advocacy for women's land rights, and culturally sensitive engagement strategies to dismantle systemic inequalities were recommended. Future research should focus on the long-term impacts of GTAI across diverse contexts to further advance gender justice and sustainable food systems.

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INTRODUCTION

Gender transformative approaches in agroecology refer to strategies and practices that not only promote sustainable agricultural methods but also actively seek to address and change the underlying social norms, power dynamics, and inequalities that affect gender relations in farming communities (Kansanga *et al.*, 2024). Globally, gender-transformative agro-ecological interventions, such as collaborative agro-ecological practices, inclusive decision-making, access to resources, and gender-sensitive training, are crucial for sustainable agriculture and gender equity (McDougall *et al.*, 2021; Kansanga *et al.*, 2024).

Gender transformative interventions in agroecology (GTIA) are approaches that empower women by enhancing their access to resources, knowledge, and decision-making power, while also engaging men to challenge and transform the cultural norms and gender biases that limit women's participation and effectiveness in sustainable agricultural practices (PELUM, 2024). The Global Programme Food Security (GPFS) now prioritises agroecology as a pathway to not only resilience but also gender justice, ensuring women are not just participants but leaders in agricultural transformation (Collins, 2017; Kasanga *et al.*, 2022; Arbenz *et al.*, 2022:6).

In Africa, gender-transformative agro-ecological interventions, such as capacity building on agro-ecological techniques, access to resources, have been implemented to address unique challenges faced by women in agriculture. However, cultural norms and gender biases still limit women's access

to agricultural resources and extension services (Agholor, 2019; Thakur, 2023). Thus, initiatives such as the African Union's Agenda 2063 and the Comprehensive Africa Agriculture Development Programme (CAADP) have been advocating for gender equity in agricultural policies and practices. These regional efforts demonstrate a growing recognition of the intersection between gender and agroecology, leading to more inclusive agricultural systems. Studies have shown that promoting gender equality can lead to improved agricultural and development outcomes, with women's empowerment being a crucial factor (Quisumbing *et al.*, 2010; Ashby *et al.*, 2012).

FAO highlights that empowering women through access to resources, training, and decision-making enhances productivity and sustainability (FAO, 2022). Research indicates that these interventions improve food security and climate resilience by fostering inclusive agricultural practices (Kerr *et al.*, 2021). The UN's SDGs emphasise the interconnectedness of gender equality and sustainable agriculture (Dhar, 2018). These interventions empower women and address gender inequities, sustaining agro-ecological practices (Meinzen-Dick *et al.*, 2014; Collins, 2017; Zaremba *et al.*, 2021; López-García & González de Molina, 2021; Gonzalez De Molina & Lopez-Garcia, 2021; Bezner Kerr *et al.*, 2022; Rachel *et al.*, 2022).

In Tanzania, agriculture is the backbone of the economy, with women constituting a large part of the farming community. The agricultural policies and programmes provide a conducive environment

for the implementation of gender-transformative agro-ecological interventions. For example, the National Agriculture Policy (2013) and the National Strategy for Gender Development (2005) emphasise gender-sensitive approaches that support sustainable agriculture (Singh, 2024). The National Ecological Organic Agriculture Strategy (NEOAS) integrates gender-transformative agro-ecological interventions to reshape power dynamics and promote equitable access to resources (Platform, 2024). Moving beyond basic gender inclusion, these interventions seek to empower women by enhancing their decision-making roles in sustainable farming systems.

Gender transformative agro-ecological intervention in crop-based farming systems, such as integrated pest management, organic soil fertility enhancement, and community-led education on sustainable practices, often exhibits distinct patterns of involvement between men and women, shaped by gender roles, cultural norms, and access to resources (Anderson *et al.*, 2019). The division of labour in agro-ecological farming is not rigid; it varies across regions and is influenced by education, access to extension services, and decision-making power within households (Doss *et al.*, 2021; Mudege *et al.*, 2022; Smith, 2023). As such, the rapid growth of agricultural transformation through gender transformative agro-ecological interventions (GTAI) is increasingly recognised as essential for addressing gender inequalities in farming (Mudege & Kakwasha, 2024; McDougall *et al.*, 2024). Gender-sensitive approaches have been widely studied (Doss, 2018; Quisumbing *et al.*, 2014). However, research has explored the relationship between gender and agricultural productivity (Meinzen-Dick *et al.*, 2014; Kabeer, 2016); there remains a critical gap in understanding the role of GTIA specifically in gender equity and inclusion in agro-ecological contexts. As such, this study aims to examine the role of gender transformative agro-ecological interventions in crop-based farming systems in Mbulu District in Tanzania with specific reference to gender division of labour, access to and

control over resources, and decision-making power. The outcomes of this study will contribute to designing policies and programs that foster gender transformative agro-ecological interventions in agricultural systems.

Background

The paper is based on work undertaken by PELUM (Participatory Ecological Land Use Management) and TGNP (Tanzania Gender Networking Programme) through a project entitled “Rural Women Cultivating Change (RWCC)”. PELUM and TGNP have been working as a consortium to implement the project. The project focuses on implementing agroecology and gender related interventions in six districts of Tanzania, namely, Morogoro Rural, Gairo, Babati Rural, Mbulu Town, Mwanza, and Same, covering 24 villages in 9 wards. However, this study is limited to interventions implemented in the Mbulu Town Council. PELUM and TGNP have implemented GTAI in Mbulu District to enhance women’s access to productive resources, strengthening decision-making power, and promoting equitable participation in agro-ecological farming systems (PELUM Tanzania, 2024). PELUM Tanzania is a network of Civil Society Organisations (CSOs) working with smallholder farmers and livestock keepers in promoting sustainable agriculture in Tanzania. The network was founded in 1995. Its main strategies and approaches include Networking, Capacity building of Member Organisations; Documentation and Communication; Advocacy with and for farmers’ rights, and Collaboration and partnership with like-minded organisations and institutions. On the other hand, TGNP was formed in 1993 as an activist non-profit organisation. TGNP’s ideology and philosophy are built on transformative feminism, which is a struggle that aims to eliminate all forms of discrimination against women and other marginalised groups, whether due to class, sex, gender, age, ethnicity, disability, geography, or nationality. Therefore, GTIA are strategies that

empower women by improving their access to resources, knowledge, and decision-making power while also engaging men to challenge and transform the cultural norms and gender biases that limit women's participation and effectiveness in sustainable agricultural practices (PELUM, 2024).

To operationalise gender-transformative agro-ecological interventions, PELUM and TGNP adopted community-driven approaches in its implementation of the project Town Council, prioritising the empowerment of rural women through targeted training programs on agroecology and gender-based violence, financial inclusion strategies, and policy advocacy. These interventions were carried out through participatory rural appraisals, which engaged both men and women in identifying and addressing gender disparities in agricultural practices. Additionally, leadership workshops were conducted to strengthen women's roles in farming cooperatives, ensuring their active participation in decision-making at both household and community levels. To enhance economic independence, smallholder women farmers received technical support in agro-ecological techniques, including organic soil management and water conservation, enabling them to boost productivity and contribute meaningfully to sustainable food systems. Thus, PELUM and TGNP interventions under the RWCC focus on agro-ecology and transformative feminism to promote sustainable agriculture and gender equity in Tanzania (PELUM, 2024).

THEORETICAL FRAMEWORK

To address GTAI, this study employed a feminist theory that critiques and analyses social, political, and economic structures that perpetuate gender inequalities. Feminism addresses social inequality and social transformation, focusing on the complexities of the gendered division of labour. The theory advocates for political, economic, and social equality between men and women. Feminist theory seeks to promote change by recognising and challenging power dynamics and oppression.

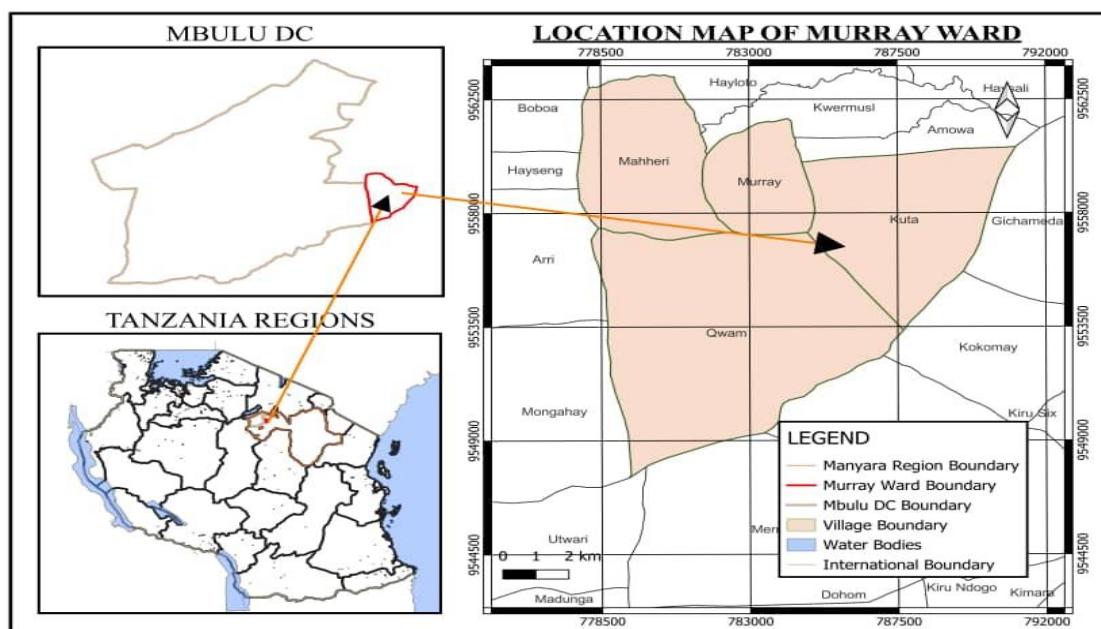
Rooted in movements advocating for women's rights and gender equity, the theory explores how power dynamics, societal norms, and cultural practices influence individuals' experiences based on gender (Humm, 1992). Feminist agroecology is a strand of feminism that aligns with agro-ecology (Collins, 2017; Zaremba *et al.*, 2021; López-García & González de Molina, 2021; Gonzalez De Molina & López-García, 2021; Rachel *et al.*, 2022; Bezner Kerr *et al.*, 2022). According to these authors, feminist agroecologists advocate putting life at the centre of the economies through an interdisciplinary dialogue between different approaches such as feminist economics, decolonial thinking, and ecofeminism. Zaremba *et al.* (2021) reframe agroecology from one of individuated principles to that of a liberating and empowering worldview and agricultural system for all. As such, feminist agroecology espouses a holistic, transformative approach centred on equitable contributions of all stakeholders, men and women inclusive, as the driver, actor, and agent of the agricultural transformative movement, because women's disempowerment directly hinders agro-ecological imperatives.

Building on this theoretical foundation, the study employed key concepts related to gender-transformative interventions that actively challenge existing gender norms and power dynamics to promote gender equity by addressing systemic barriers such as unequal access to resources, training, and decision-making power (Mudege & Kakwasha, 2024). Gender transformative change in agri-food systems involves understanding gender dynamics and norms and intentionally strengthening or shifting structures, practices, and relations towards equality (Acosta *et al.*, 2025). The theory is still in conceptual development, but opinions coalesce around core features. Leading experts conceptualise gender transformative change as involving interventions that result in a deep systemic process of change in underlying norms (Farnworth *et al.*, 2023; Awazi *et al.*, 2024).

On one hand, gender refers to the socially constructed roles, behaviours, and expectations associated with being male, female, or non-binary (Merriam-Webster, 2022). On the other hand, gender transformative agro-ecological interventions are specifically designed to promote agro-ecological practices while simultaneously addressing gender inequalities within farming communities (Cislaghi & Heise, 2020; Kansanga *et al.*, 2024). Therefore, dismantling gender disparities in agro-ecological practices aims to foster inclusivity and advance both social and environmental sustainability (Kansanga *et al.*, 2024). This holistic approach ensures that both men and women play an active role in creating equitable and sustainable farming systems, benefiting communities overall.

METHODOLOGY

Figure 1: The Map Location of Mbulu District Showing the Study Area



Research Design and Target Population.

The research design for this study was qualitative, focusing on an in-depth exploration of participants' perspectives. According to Creswell & Creswell (2018), qualitative research seeks to understand individuals' experiences within their social and cultural contexts through rich, descriptive data

Description of the Study Area

The study was carried out in Muray Ward in Mbulu District, which is one of the five districts in Manyara Region, located in Northern Tanzania. It lies between (Latitude 30°-40° S, Longitude 34°-35° E), with altitudes of 1000-2400m, and had a population of 138,593 in the 2022 census. The council promotes sustainable development and socio-economic services to increase local income and empowerment. Muray Ward, with four study villages of Murray, Kuta, Mahheri, and Qwam (Fig. 1), was selected for this study because of the presence of an NGO known as Participatory Ecological Land Use Management (PELUM). The NGO implements a feminist agro-ecological project aimed at empowering marginalised people, including women (PELUM, 2024).

collection methods. This approach allowed researchers to gather detailed insights from participants, ensuring a comprehensive understanding of the issues under study. The target population for this study comprised farmers in Muray Ward who were practising agroecology under the PELUM project.

Sampling Techniques and Sample Size

This study employed a combination of purposive and snowball sampling techniques, guided by the principle of data saturation (Charmaz & Belgrave, 2012). Purposive sampling was used to select Muray Ward and its four villages (Muray, Kuta, Mahheri, and Qwam) due to the presence of the PELUM project, which provided training to farmers on agro-ecological practices and land management systems. The PELUM project reached 304 farmers in these villages, with 47 in Kuta, 59 in Muray, 51 in Mahheri, and 147 in Qwam. Snowball sampling was used to select farmers in the four villages, with initial participants identified through the PELUM project and additional farmers recruited through referrals and recommendations to obtain a sample of 58 farmers (27 men and 31 women). The sample comprised 15 participants from Muray, 15 from Mahheri, 19 from Qwam, and 9 from Kuta villages determined by the principle of data saturation, where data collection continued until no new information emerged, thus ensuring that the sample size was determined by the depth and richness of the data rather than a predetermined number (Braun & Clarke, 2021).

Methods of Data Collection and Analysis

This study employed a qualitative approach to gather in-depth insights on smallholder farmers' experiences, perceptions, and opinions on agro-ecological interventions and gender dynamics. Qualitative insights were obtained through in-depth interviews (IDIs) with key informants (KIIs) and Focus Group Discussions (FGDs) using checklists. FGDs were held with both mixed-gender and women-only groups. In mixed settings, women were reluctant to speak freely, while men tended to overemphasise the level of gender equality. In contrast, the women-only discussions brought to light deeper cultural barriers. Also, direct observation was done to familiarise oneself with the agro-ecological practices done in the study villages. These methods provided rich data on farmers' experiences, perceptions, and opinions, as well as

insights into gender dynamics and barriers to practising agroecology. On the other hand, secondary data were collected from a range of sources, including project reports, to provide a comprehensive understanding of experiences associated with the implementation of GTAI in the study villages. The collected data were analysed using a thematic analysis approach. The analysis involved transcription, coding, and theme identification using qualitative data analysis software. The emerging themes and patterns were identified and reported clearly and concisely.

RESULTS

This study focuses on three critical areas of gender-transformative agro-ecological interventions via gender division of labour, access to and control over resources, and decision-making. These areas represent the core scope of analysis, emphasising how interventions have influenced the participation, empowerment of farmers within agroecology. The detailed discussion that follows explores each of these aspects in depth, highlighting their role in shaping equitable and sustainable farming practices.

Gender Roles and Labour Division in Agro-ecological Practices

The study reveals variations regarding experiences in gender roles based on the existing division of labour among farmers. The study found that, generally, agro-ecological practices are carried out collectively, with responsibilities shared among farmers without gender-based distinctions. Data from participants indicate that both men and women contribute to farming activities in a way that does not strictly follow traditional gender roles. This pattern was observed across different farming groups, suggesting that labour distribution in agro-ecology does not adhere to rigid gender distinctions. However, a few participants noted the existence of gender-based divisions of labour in farming. They reported that tasks such as creating ridges, preparing land, irrigating fields, and digging pits are predominantly performed by men, while activities

like seed sowing, sorting seeds, preparing and applying fertiliser, and making pesticides are generally considered women's responsibilities.

While many participants in the studied villages reported engaging in agro-ecological practices without gender bias, some women raised their voices regarding the overwhelming household chores that they bear, which are not equally shared by men. They said that this imbalance significantly impacts their effective participation in farming activities at the household level, as the burden of domestic duties limits the time and energy they can

dedicate to agro-ecological practices. In this regard, one of the key informants gave the following remarks:

"...As women, we carry the heavy burden of family responsibilities, which limits our engagement in farming. In our community, household duties always come first, and that expectation makes it difficult for us to participate fully in agricultural activities. These traditional gender roles not only restrict our ability to contribute equally but also reinforce the idea that farming is primarily a man's job" (Nowu Group leader, 24/10/2024)

Box 1: Documentary Review on Division of Labour

Division of labour within households

As was the case elsewhere, according to workshop participants, no distinct roles or tasks are assigned to men and women in farming and livestock families. Women and men engage in all activities, including farm preparation, planting, weeding, and harvesting. However, the division of labour is not fair because women spend extra time on household chores after farming activities. There is a need to educate men to assist in household chores.

Source: PELUM Tanzania (2021 Unpublished Baseline survey report covering activities at Muray, Mahheri, Qwam, and Kuta villages of Mbulu District)

Decision-making and Resource Control

This section explores how being male or female affects individuals' roles in farming, particularly in relation to family responsibilities, decision-making power, and land ownership. The insights gathered from participants highlight the complexities of gender dynamics in agricultural settings and the impact of these dynamics on farm operations. Participants expressed differing views on decision-making and access to resources for agro-ecological farming. Generally, women indicated that their ability to make independent farming decisions remains limited because of the influence of male-dominated structures, where men's voices carry more influence in agricultural planning. Indeed, a female farmer noted:

"..... Men still dominate decision-making in the household and farming. Even when we work alongside them, final decisions about land and

financial matters are often made without our input."

However, some men acknowledged the gradual shift in decision-making dynamics due to gender-transformative interventions. Thus, a male participant in the Focus group discussion (FDG) remarked that: *"...I have started seeing the importance of sharing decisions with my wife. Before, I made most of the farm-related choices alone, but now I consult her, especially about selling produce and using farming resources."* (FGD with male at Muray village, 22/10/24)

Moreover, another remark by one of the key informants, a leader of a farmer group, highlighted the challenges to be overcome to achieve the required change as follows:

"... There is a significant difference in approach regarding women often lack decision-making

power within the family, attributing this to a patriarchal influence outside the trained groups. Farmers need to apply the knowledge gained from experts without gender bias. Education and awareness are key in bridging the gap between men and women in agro-ecological practices. While both men and women may engage in similar farming activities, the power dynamics and decision-making processes remain unequal, requiring targeted interventions to promote gender equality and ensure effective implementation of agro-ecological practices” (Wayda group leader, FGD with male at Kuta village, 23/10/2024).

Besides, the study revealed that land ownership emerged as a key factor influencing farmers' autonomy and decision-making in agro-ecology. Participants in the study observed that access to land determines one's ability to plan long-term strategies on agriculture, secure financial opportunities, and exercise control over farm operations. In large measure, land ownership remains largely unequally distributed, with traditional norms favouring male ownership and control. However, despite the notable changes in land ownership dynamics, especially among members in trained groups, there was a growing feeling among some of the participants in the study who noted that cultural and structural barriers still limit women's ability to own and manage land independently. This is highlighted in the following remarks by one of the informants, a female group leader.

“Although stakeholders have provided education on gender equality in all agro-ecological farming activities, including women's right to own land, our community still follows a patriarchal system that believes land ownership should be reserved for men, not women. While the training has brought some change, progress remains slow, and much more effort is needed to educate the community on the importance of gender equality in land

ownership.”(Group leader at Muray village, 20/10/2024).

Similarly, a male participant in FGD held at Kuta village remarked that: *“women are becoming more involved in managing resources, but there is still resistance. Some men believe land and money should remain under their control.”* Moreover, participants in a mixed FGD held at Maheri village shared their views on decision-making power and control over farming resources. Men in the group expressed that gender equality had improved, stating that women now have equal rights in household and farming decisions. They emphasised that there was no longer discrimination, with one male participant asserting that *“Nowadays, men and women have the same rights; we do not oppress women.”* While men maintained that equality had been achieved, observations during the discussion indicated that women were less vocal and often deferred to men's statements (FGD Kuta, 28/10/2024). To gain deeper insight into women's perspectives, a separate female-only FGD was conducted. In this space, participants felt more comfortable sharing their views. They openly acknowledged that cultural norms often restrict their ability to participate in decision-making, reinforcing male dominance in both household matters and agro-ecological farming practices (FGD with female farmers at Qwam Village, 24/10/24).

The midline report by the project highlights significant progress in certain areas while also noting that some issues still need to be addressed to achieve gender equality (see Box 2). According to the report, significant improvement was achieved among women aged 18-35, whose decision-making scores rose from 4.6 to 7.0, indicating increased involvement in managing productive assets. The midline report also suggests a positive shift in women's roles, making progress toward gender equality, though further efforts are needed to achieve comprehensive gender equity (see Boxes 2 and 3). This noted development is in contrast to the baseline survey report, which showed women

having limited involvement in agricultural decisions (see Box 3), with men typically making choices independently and women handling most household chores.

Box 2: Decisions Regarding Agricultural Production and Inputs during the Midline Survey

The midline survey report reveals progress in women's decision-making roles in agriculture, with scores rising from 4.6 to 7.0 for women aged 18-35. Training/intervention improved yields and income, reducing men's stress and domestic violence. However, reproductive labour remains unequal, and attitudes toward women's rights to be free from violence require further change.

Source: PELUM midline survey report (1 August 2024)

Box 3: Decisions Regarding Agricultural Production and Inputs during the Baseline

The baseline survey shows limited involvement of women in agricultural decision-making. Patriarchal norms persist, as men control land, livestock, and income. Women shoulder both farming and household chores, having little rest time. Male heads of households are seen as gender sensitive when sharing partial income with wives.

Source: PELUM Tanzania (2021 Unpublished Baseline Survey Report on Murray, Mahheri, Qwam, and Kuta villages of Mbulu District)

DISCUSSION

The study focuses on the critical role of gender-transformative agro-ecological interventions in promoting gender equity within crop-based farming systems in Tanzania, drawing on feminist theory. The study shows that as a result of gender-transformative agro-ecological interventions in the study area, there has been a shift towards more equitable labour division in agro-ecological practices, with many farmers engaging collectively in farming activities. This aligns with Zaremba *et al.* (2021) and Sibanda (2025), who argue that feminist agro-ecology promotes shared responsibilities among genders, fostering a more inclusive agricultural environment. Indeed, Doss *et al.* (2020) argue that collective farming can enhance gender equity, indicating that fostering cooperation among farmers is essential for promoting gender-inclusive practices. While many individuals have moved toward inclusivity in farming practices, a small number still maintain traditional gender-based division of labour. This duality suggests that while progress is being made towards inclusivity, there remain challenges, such as traditional perceptions regarding labour roles that still persist in certain contexts. This entrenched social norms often hinder

the full realisation of gender equity in agricultural settings (Cislaghi and Heise 2020; Ramirez-Santos *et al.*, 2023; Blau *et al.*, 2020).

Although many participants reported that agro-ecological practices are carried out collectively, women expressed concerns about their heavy household chores not being equally shared by men. This unequal division of domestic labour significantly limits women's ability to participate fully in farming activities, as the burden of household responsibilities reduces the time and energy they can dedicate to agro-ecological practices. This shows that traditional gender roles and social norms continue to restrict women's engagement in agriculture (Cerrato & Cifre, 2018; Zaremba *et al.*, 2021).

While the study shows improvements in overcoming gender-based division of labour, it highlights the fact that decision-making power remains largely male-dominated. Similar observations have been reported in the literature (see, for example, Twyman *et al.*, 2015). These patriarchal norms limit the effect of gender transformative interventions in the implementation of agro-ecological practices. While some men

acknowledged the importance of shared decision-making, many women reported limited agency in agricultural planning. This disconnect suggests that despite interventions, patriarchal structures continue to influence decision-making processes, reinforcing the need for targeted educational initiatives to challenge these norms (Bezner Kerr *et al.*, 2022). Generally, these findings contrast the expected notion that a gender transformative agro-ecological intervention can rapidly transform gender relations (Collins, 2017; Gonzalez & Lopez-Garcia, 2021; López-García, & González de Molina, 2021; Bezner Kerr, *et al.*, 2022; Rachel *et al.*, 2022), because persistent cultural and social norms take long to change.

Furthermore, access to land emerged as a critical factor influencing farmers' autonomy and decision-making. The findings indicate that while GTIA has initiated discussions on equitable land access, traditional norms still favour male ownership. It was also revealed during FGD that while women are increasingly participating in resource management, resistance persists, as some men still hold the belief that control over land and finances should remain with them. This aligns with the work of Farnworth *et al.* (2023), who observed that despite the introduction of gender-transformative tools, traditional norms still reinforce male control over land and key farming decisions, limiting women's autonomy. A study by Witinok-Huber *et al.* (2021) indicates that women farmers have less access to technology, agricultural resources, and information; thus, highlighting the necessity of including women in agro-ecological interventions, as they play a crucial role in preserving and transmitting agricultural knowledge (Cáceres-Arteaga & Lane, 2020) and without their participation, sustainable agro-ecological practices cannot be achieved. The slow progress in changing land ownership dynamics underscores the necessity for ongoing community education and advocacy for women's rights to land.

This study reveals how patriarchal norms influence gender roles, often pushing women into less

influential positions in decision-making and resource access, despite their crucial contributions. Drawing on the feminist theory, these findings underscore the necessity of challenging the power dynamics that perpetuate gender inequality in agriculture (McDougall *et al.*, 2021). Feminist theory posits that true transformation requires dismantling the societal structures that dictate gender roles (Zaremba *et al.*, 2021). Also, Alston (2019) argues that agro-ecology should not only focus on environmental sustainability but also on social justice, emphasising the importance of addressing gender disparities in agricultural systems.

CONCLUSION

This study highlights that gender-transformative agro-ecological interventions are gradually fostering inclusivity in crop-based farming systems. While collective labour and awareness have improved, decision-making structures remain largely male-dominated, limiting women's full participation. Persistent patriarchal norms continue to shape gender roles and hinder the transformative potential of these interventions. Equitable access to land and shared control over resources for women remain critical challenges. These findings underscore the importance of sustained education, culturally grounded community engagement, and policy support. Future research should examine the long-term impacts of such interventions across diverse settings and explore pathways to dismantle systemic inequalities that restrict gender justice, ultimately contributing to sustainable and equitable food systems.

Disclaimer (Artificial Intelligence)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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