Gender-Responsive Performance Evidence: Advancing Women's Participation in the Adoption of Superior Varietal in Nigeria

Foundation for
Sustainable
Smallholder Solutions

14 October 2025

REPORT

Gender-Responsive Performance Evidence: Advancing Women's Participation in the Adoption of Superior Varietal in Nigeria

Executive Summary

The Foundation for Sustainable Smallholder Solutions (FSSS) conducted a gender-focused analysis across ten states in Northern Nigeria – Kano, Benue, Nasarawa, Niger, Taraba, Kebbi, Jigawa, Bauchi, Kaduna, and the Federal Capital Territory (Abuja) – to better understand the barriers and opportunities influencing women's participation in the adoption of improved varieties of rice, maize, and cowpea.

Drawing insights from focus group discussions and structured surveys involving 30 smallholder farmer groups, the study examined how gender differences shape access to information, resources, and decision-making in agricultural innovation.

Findings reveal persistent gender gaps that significantly affect the design and effectiveness of on-farm trials. Although women constituted 64% of the study population and contribute meaningfully to agricultural production, they remain marginalised in key areas of decision-making and access to inputs. Only 22% reported having even moderate influence in household or farming decisions, while 67% faced labour shortages compared to men, and 44% used less fertiliser due to financial and cultural constraints. Women were also found to be largely excluded from seed trials and extension services.

The analysis highlights that women's priorities in crop variety selection differ notably from those of men. Women tend to value traits such as early maturity, good taste, and labour efficiency — reflecting their dual roles in production and household management. However, limited mobility, time constraints, and social norms continue to restrict their participation in formal dissemination platforms. Instead, women rely heavily on peer-to-peer networks and community field days as their primary sources of information.

To close these gender gaps, the report recommends a set of actionable measures:

- Establishing low-input variety trials that reflect women's farming conditions;
- Integrating gender-responsive TRICOT and Farmers' Field School (FFS) protocols;
- Strengthening communication through women's groups and female extension agents; and
- Adopting FFS models that position women as active hosts and evaluators.

Together, these strategies aim to ensure that FSSS's variety testing platform not only advances agricultural innovation but also empowers women farmers as equal participants and beneficiaries in the process.

This report has been developed as part of the Foundation's prerequisite for intervention activities. For more information, visit www.fsssolutions.org.

Photo credits: In-House Photo unless stated otherwise.

1. INTRODUCTION

Agriculture remains the economic backbone of northern Nigeria, with small-scale producers—particularly women and youth—forming the foundation of food production across the region and beyond. Yet, despite their indispensable role, women farmers continue to face persistent barriers that limit their access to improved crop varieties, productive inputs, and yield-enhancing technologies. These constraints reinforce gender inequalities across agricultural value chains and hinder the region's broader pursuit of sustainable food security and economic growth.

Recent research provides compelling evidence of these disparities. A 2024 study, *Why Contexts Matter for Gender-Equal Outcomes in Research-Based Plant Breeding: The Case of Maize in Nigeria*, found that women cultivate significantly smaller plots of maize—averaging 1.8 hectares compared to men's 4.1 hectares—largely due to unequal land tenure systems and limited access to inputs (Springer, 2024). Similarly, a 2025 study on *Gender Disparities in the Adoption of Improved Management Practices for Soybean Cultivation in North-East Nigeria* revealed that while both male- and female-headed households adopt improved varieties and technologies, the level of adoption varies greatly due to women's socio-economic and cultural constraints (PMC, 2025).

It is within this context that FSSS is implementing an innovative post-release variety testing platform for rice, maize, and cowpea across nine states in Nigeria. The platform is designed to provide farmers with localised, evidence-based insights on crop performance under diverse agro-ecological conditions. However, the effectiveness of this initiative depends on how well it reflects women's farming realities and ensures that communication and dissemination strategies genuinely reach, engage, and benefit them.

This gender analysis was therefore undertaken to guide the design of FSSS's variety testing platform, ensuring it is inclusive, responsive, and impactful. By documenting gender-based differences in access to resources, decision-making power, information channels, and trait preferences, the report provides practical insights for creating trials that are both scientifically rigorous and socially inclusive. Ultimately, it aims to support a more equitable agricultural system—one where innovation uplifts every farmer, particularly the women whose labour sustains Nigeria's food security.

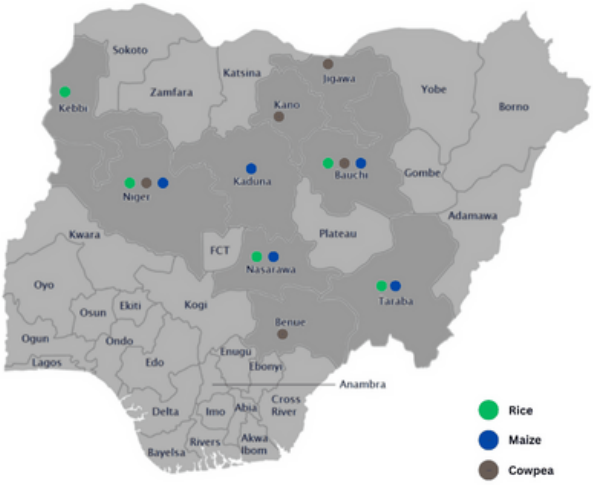
2. BACKGROUND AND RATIONALE

2.1 Geographic and Demographic Context

This gender analysis draws on primary data collected from smallholder farmers across ten northern Nigerian states: Kano, Benue, Nasarawa, Kaduna, Niger, Taraba, Kebbi, Jigawa, Bauchi, and the FCT. These states span diverse agro-ecological zones, ranging from the arid Sudan and Sahel savannahs to the fertile Guinea savannah, supporting major crops such as rice, maize, cowpea, and various horticultural produce.

A total of 191 participants—organised under established farmer cooperatives—took part in the study, comprising 36% male and 64% female farmer groups. Notably, youths aged 18–35 accounted for over 40% of respondents, highlighting their growing involvement and transformative potential in smallholder agriculture.

Participants cultivated an average of 1–3 hectares, although farm sizes ranged from less than one hectare to over five. About 60% of respondents either rented land or farmed on their spouses' plots, reflecting persistent land tenure insecurity, particularly among women. This challenge continues to shape gendered access to productive resources and influence agricultural decision-making.



A map of the states and crops covered

2.2 Data Collection and Analysis

Data collection was carried out from 6–10 October 2025 using structured surveys administered to members of farmer cooperatives and groups across the ten target states. The process employed KoboToolbox, a secure digital platform that ensured data accuracy, standardisation, and real-time monitoring.

Data analysis involved descriptive statistics—such as frequencies, percentages, and rankings—complemented by gender-disaggregated

comparisons to identify patterns, disparities, and emerging gender dynamics in access to resources, participation, and decision-making.

To enhance validity, data triangulation was employed through cross-checks with field supervisors and cooperative leaders. Ethical standards were upheld throughout the process: participants were informed of the study's purpose, assured of confidentiality, and their voluntary consent was obtained prior to participation.

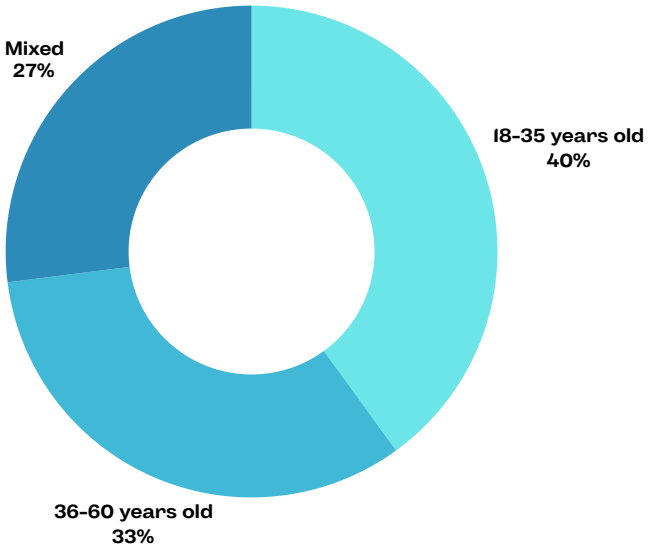


Figure 1: *Age Group Distribution*

2.3 Gender Analysis Interrogation

This analysis focuses on three guiding questions—Agency, Access, and Equity—that reflect women's lived experiences in agriculture:

1. Agency: How much say do women have in selecting crop varieties, and how can their decision-making power be strengthened?
2. Access: What information do women receive about improved varieties, and how confident are they in that information?
3. Equity: How do women's farming realities differ from men's, and what do these differences imply for creating fair and inclusive trials?

The responses to these questions provide practical insights to help FSSS design interventions that inform the adaptation of trial protocols, tailor dissemination strategies, and establish monitoring frameworks that ensure women's meaningful participation and equitable benefit from the variety testing platform.

3. KEY FINDINGS

a. Women's Agency and Authority in Variety Selection:

Women play vital roles in crop production, yet their voice in variety selection remains limited and often mediated by men.

Findings show that variety choices are made jointly in 47% of households, although men usually have the final say. Decisions are made solely by wives in 26% of households, by husbands in 20%, and through community processes in 7%.

When women rated their level of influence, 27% described it as very high, 47% as high, 7% as moderate, and 13% as low. However, many clarified that a "high" level of influence often meant being consulted, rather than having the power to decide. About one in four women (25%) said they had little freedom to choose what to plant.

Women highlighted key factors that would strengthen their voice in decision-making:

- Access to credible variety information (57%)
- Training and participation in women's groups (50%)
- Availability of improved seed
- Secure land ownership (21%)
- Guidance from extension agents and demonstration fields (21–29%)

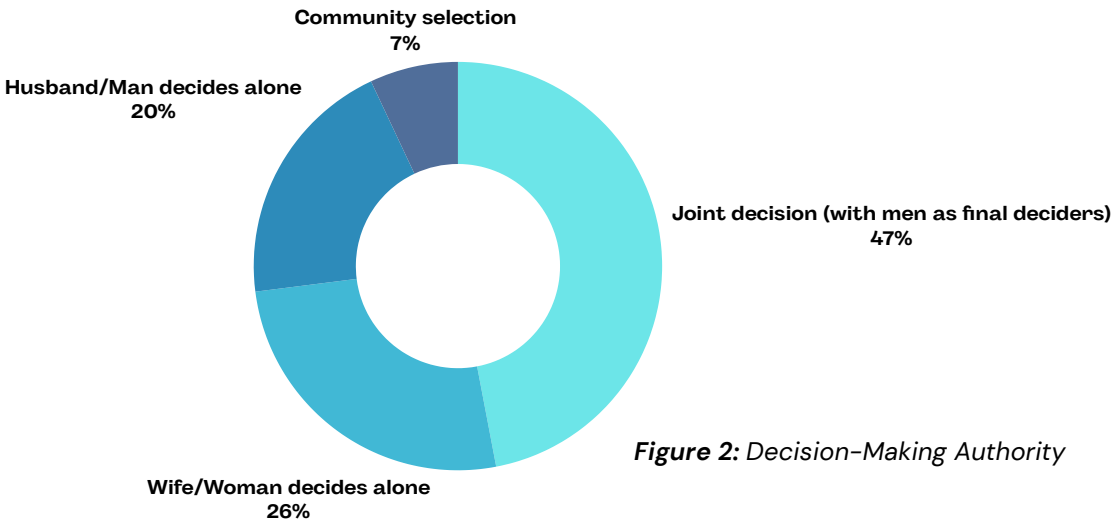


Figure 2: *Decision-Making Authority*

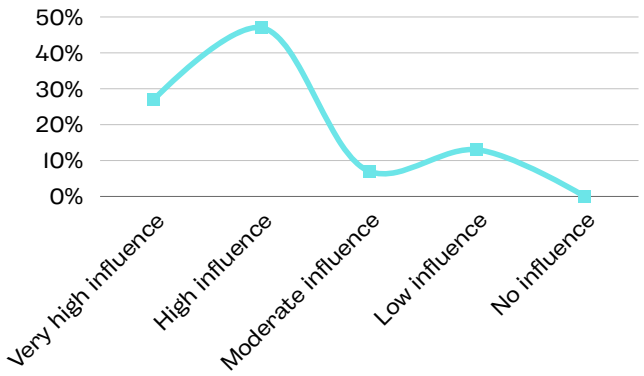


Figure 3: *Women's Influence Levels*

These findings align with recent evidence showing that women's roles in agricultural decision-making remain constrained, particularly in male-headed households (e.g. the 2020 *Unequal Partners study*; Amusa et al., 2022; and the 2025 panel survey on commercialisation in Nigeria).

For FSSS, the message is clear: empowerment drives adoption. Beyond generating data, the platform must also enable women to access, understand, and apply this information to make confident, informed choices.

b. Information Access, Sources, and Trust

Findings show that farmers rely on multiple channels for information, but informal networks remain dominant. Women are notably more engaged with participatory, face-to-face platforms. Seventy-eight per cent of women, compared with forty per cent of men, reported receiving information from extension agents and field days, highlighting the importance of interactive learning. Women also depend more on farmer groups (67% vs. 20%), reflecting the strength of collective platforms in women's agricultural learning and support systems.

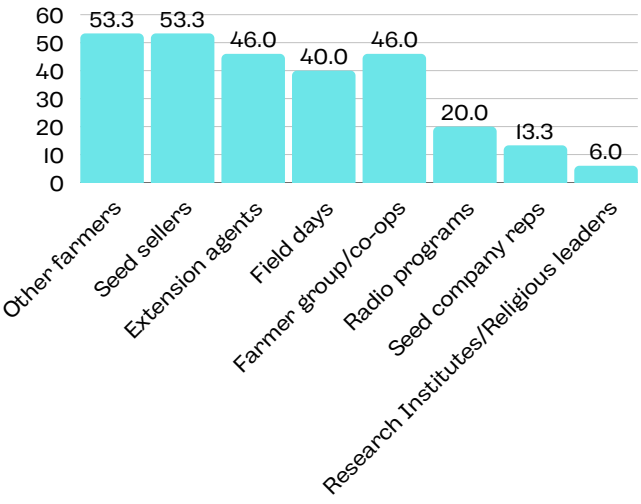


Figure 4: *Information Sources by Farmer Groups*

When asked which sources they trust most for variety advice, respondents revealed a trust gap between access and credibility. While 52% obtain information from other farmers, only 46% consider them the most reliable source. Similarly, 53% receive updates from seed sellers, yet just 27% regard them as trustworthy. This mismatch suggests that although commercial and informal channels are accessible, farmers—especially women—still seek information grounded in local experience and proven results.

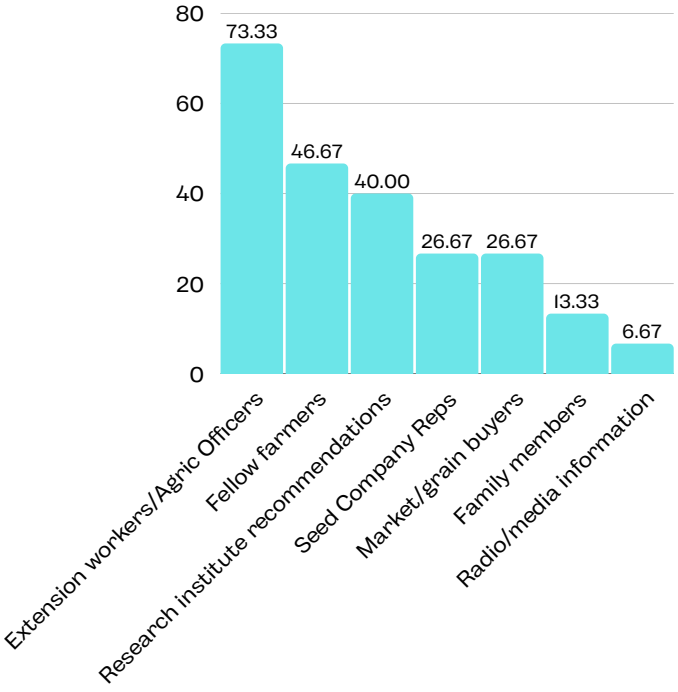


Figure 5: *Most Trusted Sources for Female Farmers*

When ranking their most useful variety information, respondents prioritised the following:

1. Yield performance – ranked first by 57% of respondents
2. Maturity period – ranked first or second by 64%
3. Disease and pest resistance – ranked second or third by 36%
4. Quality traits and market acceptability – cited for taste, grain quality, and cooking value

These preferences reflect farmers' lived realities: yield secures food and income; maturity affects labour and household nutrition; resistance traits reduce input costs; and quality determines market value.

The implication for FSSS is that effective dissemination must go beyond yield figures. Information materials should capture performance under real-life conditions, linking productivity with traits most valued by women, and should be delivered through trusted, human-centred channels that promote dialogue.

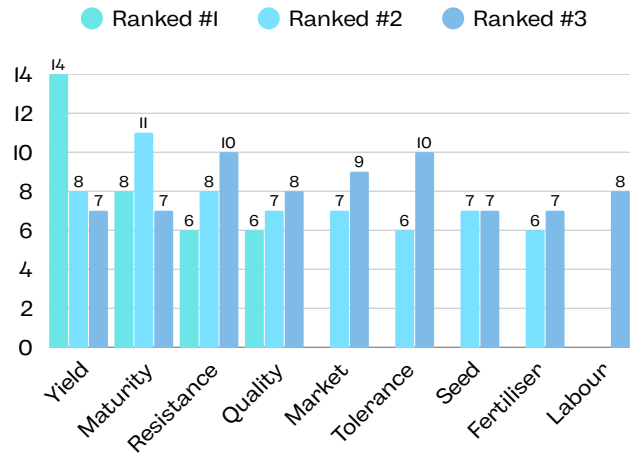


Figure 6: *Varietal Traits Ranking Among Female Farmers*

c. Women's Farming Conditions Compared to Men

Behind every yield gap lies a gap in access. Findings from this study confirm that women farmers operate under far more constrained conditions than their male counterparts.

When asked to compare their farming realities across six areas—land ownership, land quality, farm size, fertiliser use, irrigation access, and labour availability—female respondents painted a clear picture of disadvantage. They farm smaller plots, apply less fertiliser, have little or no access to irrigation, and rely mostly on family labour. Even the land they cultivate is often of poorer quality.

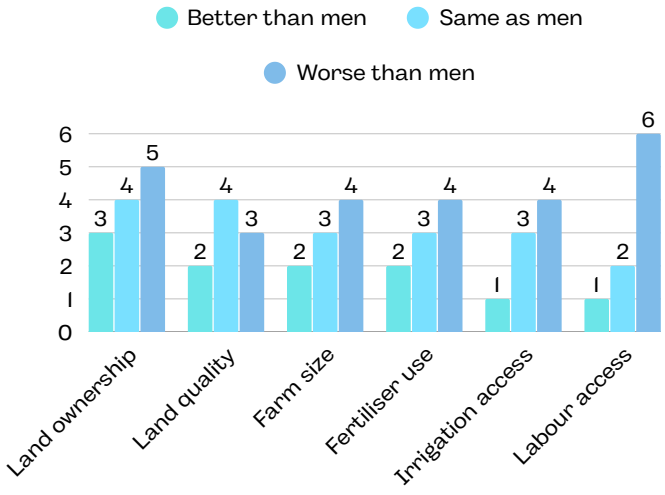


Figure 7: *Women's Farming Conditions Compared to Men's*

These findings echo well-documented research across Nigeria and sub-Saharan Africa showing that structural inequalities continue to shape women's productivity (Olayemi et al., 2022).

The barriers are not merely technical—they are systemic, rooted in unequal access to land, inputs, and decision-making power.

For FSSS, this demonstrates that standardised performance trials conducted under optimal conditions fail to reflect women's farming realities. Women need data that represent the environments in which they actually farm—low-input, resource-constrained, and labour-limited contexts.

By integrating parallel low-input trials alongside optimal management trials, FSSS can provide a more realistic evidence base for women's decision-making. This approach not only strengthens scientific credibility but also offers women farmers a fairer basis to evaluate and adopt improved varieties—an important step towards closing the productivity gap.

d. Gender Differences in Constraints and Trait Priorities

Smallholder farmers across northern Nigeria face multiple, intersecting constraints that limit productivity and the adoption of improved varieties. When asked to rank their biggest farming challenges, respondents identified the following as the most pressing:

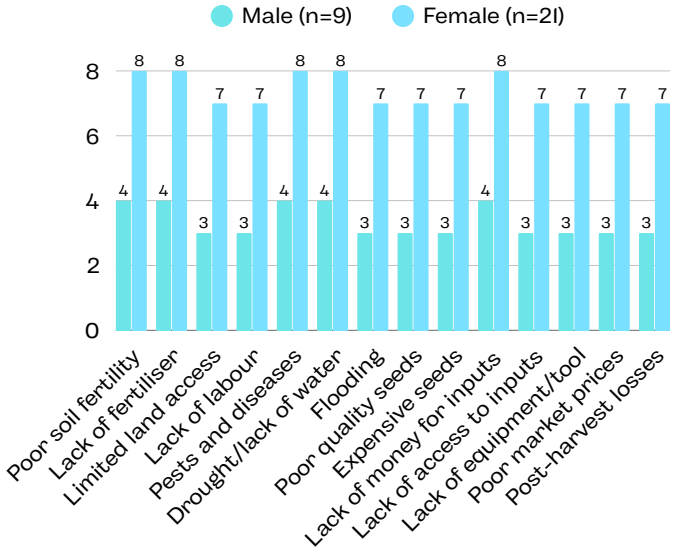


Figure 8: *Top Farming Challenges by Gender*

The challenges are broadly similar across genders, although women mention them more frequently, partly due to the larger sample size. This reflects the systemic constraints faced by all smallholder farmers. However, the intensity and implications of these challenges may differ by gender.

For example, women's limited access to credit and lower cash incomes make the high cost of seeds and fertiliser particularly prohibitive. Similarly, labour shortages tend to be more acute for women, who have less control over household labour and face

social restrictions on hiring male workers.

When asked why they have not tried new or improved varieties, the responses were as follows:

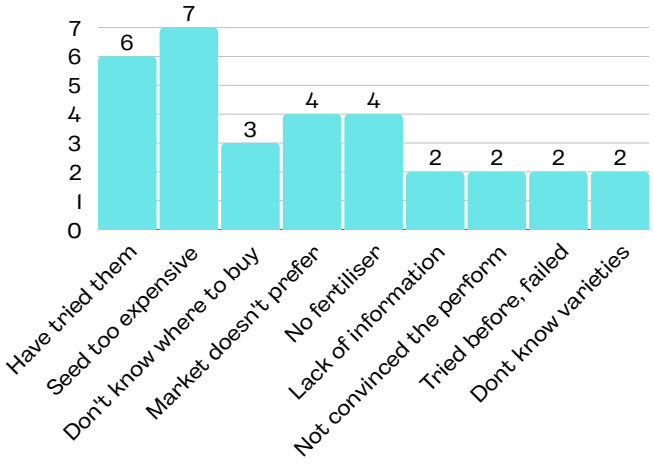


Figure 9: *Barriers to Variety Adoption by Gender*

- 64% of respondents stated that the high cost of certified seed is the single largest barrier to variety adoption.
- 57% reported that they had tried improved varieties but did not continue using them.
- 36% mentioned that the lack of market demand for certain improved varieties discourages adoption.
- 21% indicated that they do not know where to obtain seeds.
- 14% cited lack of information as a barrier.

Gender disaggregation reveals that women are more likely than men to cite cost barriers (78% of women vs. 40% of men mentioned "seeds too expensive") and lack of complementary inputs (44% of women vs. 20% of men mentioned "no fertiliser"). This pattern reinforces the finding from Section C that women operate under more resource-constrained conditions and therefore require varieties that perform well under low-input management.

When asked explicitly whether men and women prioritise different crop traits, 36% of respondents answered "yes," indicating awareness of gender-differentiated preferences. Women respondents identified the following traits as particularly important to them (see figure 10).

Recent studies across sub-Saharan Africa show that women farmers tend to prioritise traits such as cooking quality, market value, and labour ease, while men focus more on yield and field performance (Weltzien et al., 2024). For FSSS, variety testing must therefore assess more than yield—capturing factors such as maturity, taste, disease resistance, and storage quality. Participatory trials such as PVS and

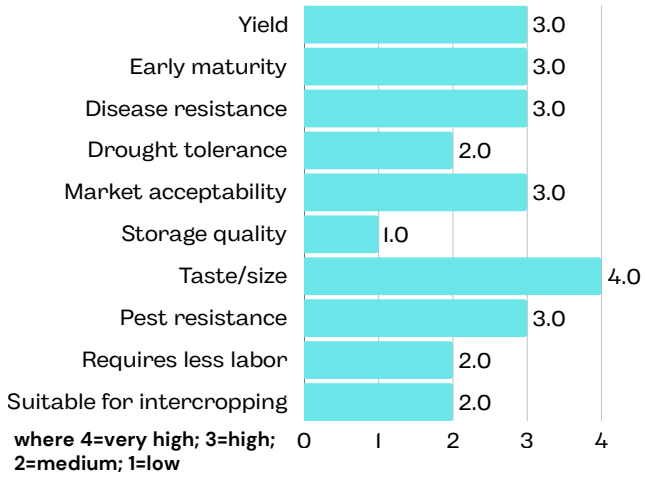


Figure 10: *Traits Prioritised by Women*

TRICOT should also reflect women's priorities and ensure their active involvement as evaluators.

e. Institutional Barriers and Trial Participation

Women's participation in formal seed production and variety testing is constrained by multiple institutional and social barriers. Survey respondents identified the following as key obstacles:

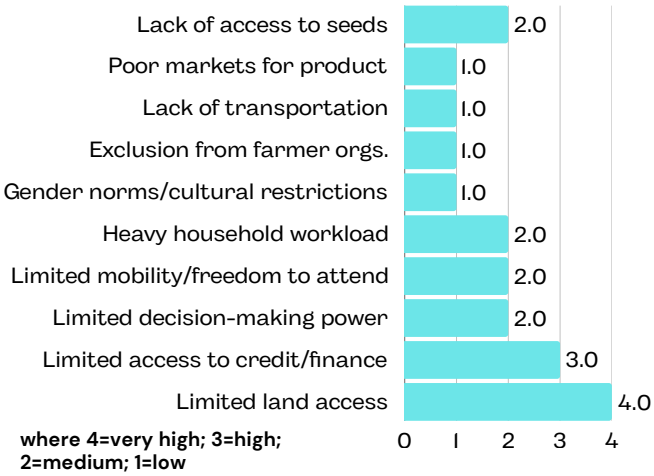


Figure 11: *Institutional Barriers Limiting Women's Participation in Trials*

- 57% of women respondents cited insecure land tenure and smaller farm sizes as major constraints limiting their ability to allocate land for trial plots.
- 43% of respondents stated that hosting trials or purchasing trial seeds often requires upfront cash, which women typically lack.
- 29% of respondents reported that women may need permission from their husbands or male household heads to participate in trials or variety demonstrations.

- 29% also cited that social norms and household responsibilities restrict women's ability to travel to trial sites or attend training sessions.
- 29% mentioned that women are often not informed about opportunities to participate in variety testing.

Despite these barriers, 71% of respondents (17 out of 21) reported having participated in or hosted seed trials, demonstrations, or variety testing within the past two years.

The most common form of participation was through demonstration plots (80% of those who participated), followed by on-farm trials and testing varieties across different plots. This relatively high participation rate likely reflects the fact that survey respondents were drawn from organised farmer cooperatives, which are more likely to engage in extension and research activities.

However, participation does not necessarily translate into influence or benefit. Women who participate in trials may do so primarily as labourers—providing land or labour for trials managed by men or external researchers—rather than as decision-makers or evaluators. Ensuring meaningful participation requires that women not only host trials but also take part in selecting the varieties to be tested, evaluating performance, and disseminating results.

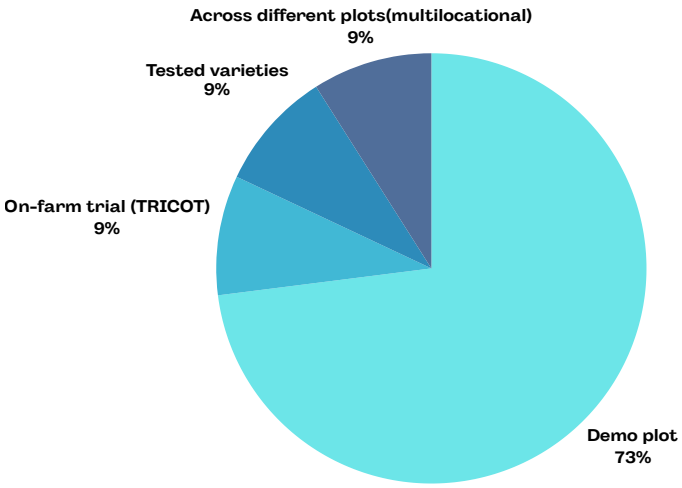


Figure 12: *Breakdown of Trial Types*

Notably, women are more likely than men to test varieties under low-input conditions (33% of women vs. 20% of men). This pattern reflects women's resource constraints but also highlights an important insight: women's on-farm testing generates performance data under the sub-optimal conditions that characterise much of smallholder agriculture in northern Nigeria.

These findings reinforce the recommendation from the GenderTech Review that FSSS should implement parallel low-input trials alongside optimal management trials. Women and resource-constrained farmers need to see how varieties perform under conditions similar to their own. Without this information, they cannot accurately assess whether a variety will perform well on their farms, and performance claims based solely on optimal management conditions may be perceived as irrelevant or misleading.

CONCLUSION AND RECOMMENDATIONS

Women smallholder farmers remain the backbone of rural agriculture, yet they continue to face deeply entrenched barriers that hinder their full participation in innovation and variety adoption. This gender analysis highlights the realities many women contend with—restricted land ownership, limited access to inputs, smaller farm sizes, and institutional biases that keep them at the margins of research and decision-making.

Despite these constraints, women contribute significantly to agricultural labour, food security, and household welfare. They are not passive beneficiaries but active drivers of change.

To close the gap between potential and participation, FSSS must move beyond treating inclusion as a checkbox exercise and instead weave gender responsiveness into the core of its variety testing and dissemination platform. By doing so, FSSS can generate performance data that reflects women's realities, address systemic inequities, and amplify their voices in agricultural innovation.

Key Recommendations

1. Implement Parallel Low-Input Trials to Reflect Women's Farming Conditions
Conduct parallel low-input or sub-optimal management trials alongside standard ones. These should mirror women's real farming environments—rain-fed conditions, smaller plots, minimal fertiliser use, and intercropping systems.

2. Prioritise Women's Participation in TRICOT Trials as Hosts and Evaluators
Ensure women's participation in TRICOT trials as both hosts and evaluators, with a minimum target of 50%. Integrate traits that matter most to them—early maturity, taste, disease resistance, labour efficiency, and intercropping potential.

3. Ensure Women's Involvement in Multi-Location Trials and Participatory Variety Selection
Promote women's active participation in multi-location and participatory variety selection trials. Schedule field days at times convenient for them, considering domestic responsibilities, and record gender-disaggregated preferences.

4. Leverage Women's Groups as Core Dissemination Partners
Collaborate with women's cooperatives and farmer groups as key platforms for demonstration plots, peer learning, and collective seed procurement. These groups can become trusted dissemination partners, enhancing adoption and ensuring sustainability through ownership and peer influence.

5. Strengthen Farmer Field Schools with Gender-Inclusive Design
Redesign Farmer Field Schools (FFS) to accommodate women's schedules and domestic responsibilities. Set explicit participation targets, provide childcare options, and feature women-led demonstrations and testimonies to build confidence and trust among women farmers.

6. Develop Gender-Sensitive Communication Products and Channels
Create communication materials that cater to diverse literacy levels and priorities—highlighting multiple traits beyond yield. Use visual, oral, and radio-based formats featuring female anchors and local influencers. Elevate women farmers' voices through culturally resonant folk dramas, songs, and videos.

7. Integrate Support Mechanisms for Women's Variety Adoption
Connect women farmers with financial institutions, seed companies, and market actors to ensure information translates into tangible action. Support mechanisms such as credit access, affordable seed, bundled inputs, and market linkages should be embedded within FSSS's platform to sustain adoption.

8. Conduct Follow-Up Gender Analysis to Assess Women's Decision-Making Authority
Undertake deeper qualitative research—through focus group discussions and interviews—to better understand women's decision-making power, preferred communication channels, and barriers to adoption. These insights will inform more targeted outreach and engagement strategies.

9. Strengthen Extension Services and Recruit Female Extension Agents
Work with public and private extension systems to build capacity for gender-responsive communication. Invest in training and recruiting female extension agents who can effectively reach women farmers, particularly in communities with restrictive social norms.

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