

GENDER DYNAMICS IN SEED SYSTEMS DEVELOPMENT

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PIM SYNTHESIS BRIEF

NOVEMBER 2020

All agricultural production—whether of crops, trees, forages, livestock, or fish—starts with seeds,* making seed security vital to food security. Seed security means that producers—smallholder farmers especially—have permanent and unrestricted access to adequate quantities of quality seed that is suitable to their agroecological conditions and socio-economic needs. Efforts to enhance seed security should be inclusive, without disparities related to income, social class, age, or gender. Yet, gender gaps reveal themselves across the seed system, including in the breeding, production, selection, and distribution stages, as well as in how the seeds are used and who reaps the benefits from this use.

While there is extensive literature on seed systems and how they should be organized to ensure seed security for smallholder farmers, a body of research unpacking gender dynamics within these systems has just begun to emerge. This includes a portfolio of projects initiated and funded by the CGIAR Collaborative Platform for Gender Research, which was hosted within [PIM's Flagship 6: Crosscutting Gender Research and Coordination](#) from 2017–2019 (Box 1). This brief summarizes this early work and provides an outlook for future research to mainstream gender analysis in seed systems development.

* We use the term “seeds” to refer to propagation material including crop varieties and seeds (botanical seeds, as well as other planting materials for crops, such as tubers and cuttings), livestock breeds and animal seed stock (young animals of any livestock and fish seed or fingerlings that can be brought into a farm, including quality semen).

KEY MESSAGES

- ▶ To enhance the reach and effectiveness of formal breeding programs, formal seed systems must generate quality seeds that respond to the different needs and preferences of both women and men, across socio-economic categories.
- ▶ Informal seed systems can reach smallholders, particularly women, where formal systems do not. Integration of formal and informal seed systems could generate synergies to improve availability and accessibility of quality seeds for both women and men.
- ▶ Beyond improved equity in access to seeds, equally important is to evaluate what programs, policies, and business models can improve the *use* and *control* of quality seeds, and the *benefits* arising from their use, in a cost effective, inclusive, and equitable way.
- ▶ It is time for a new paradigm in which we ask how seed systems development can be transformative and provide business opportunities for both women and men, not just how gender responsiveness makes seed systems more effective.
- ▶ Future research should seek to improve our understanding of gender dynamics and gendered opportunities and constraints in seed systems across different commodities, including crops, trees, fish, and livestock.

WHAT WE ALREADY KNOW ABOUT GENDER DYNAMICS IN SEED SYSTEMS

Existing evidence on how gender dynamics and norms interact with seed systems reveals four conditions essential to achieving seed security for women and men farmers:

1. Seeds need to be of high **quality** and respond to the needs and preferences of both women and men from different demographic and socioeconomic categories.
2. Quality seeds must be physically **available** for all smallholder women and men farmers in the right place, at the right time.
3. Quality seeds must be **accessible**, meaning that farmers can obtain reliable information about seeds, can afford them, and can physically obtain them, regardless of gender.
4. Both women and men can **use and control** quality seeds and the benefits arising from their use.

Seed quality: Beyond physical traits

Quality needs to be evaluated not only in terms of physical traits such as germination rates, but also in terms of whether the seeds meet the needs and preferences of women and men farmers. Although major breeding efforts by agricultural research centers, including those in the CGIAR network, have made great strides toward improving seed quality, they have not always done so in a gender-responsive way.

Formal breeding programs have traditionally focused on high-value crops and species with significant



productivity and commercialization potential, and when engaging with smallholder producers, they have often interacted only with men, consequently overlooking traits preferred by women farmers or livestock keepers. Varieties and breeds with low market value but that are nonetheless important for smallholder farmers' household food security and nutrition (for example, chickens, which are often under women's control) have frequently been left out. Some new varieties may even have had traits that could disempower women, for instance by increasing their labor burden or requiring complementary inputs to which women had less access than men (Bergman Lodin et al. 2012, Teklewold et al. 2013).

Gender-responsive participatory plant breeding (PPB) addresses some of these shortcomings by bringing women and men farmers and scientists together to assess and improve varieties under local farm conditions, including selecting locally preferred traits (Vernooy 2020). Varieties created through PPB can then be multiplied locally and, where govern-

Box 1

The CGIAR Collaborative Platform for Gender Research (2017–2019) was housed within the CGIAR Research Program on Policies, Institutions, and Markets (PIM) and coordinated by KIT Royal Tropical Institute. As of January 2020, the CGIAR GENDER Platform is led by the International Livestock Research Institute (ILRI).

The Platform funded five projects on gender dynamics in seed systems in 2017 and, in collaboration with Integrated Seed System Development Africa (ISSD Africa), a sixth project in 2019.

1. [Gender dynamics in fodder seed systems: Evidence from East Africa](#)
Birhanu Lenjiso and Alessandra Galiè, International Livestock Research Institute
2. [Assessing institutional innovation to promote women led informal seed systems in Eastern India](#)
Ranjitha Puskur, International Rice Research Institute
3. [Gender and the moral economy of sweet potato vines: A study in Tanzania](#)
Margaret McEwen, International Potato Center
4. [Integrating gender into Kenya's evolving seed policies and regulations for roots and tubers](#)
Netsayi Mudege, International Potato Center
5. [Gender dynamics in non-hybrid cereals and legumes seed systems in Ethiopia and Uganda](#)
Esther Njuguna-Mungai, International Crops Research Institute for the Semi-Arid Tropics
6. [Reducing social gaps in access to seeds: A cluster randomized trial in Kenya](#)
Berber Kramer, International Food Policy Research Institute

ment regulations allow, be submitted for formal registration and release. A gender-responsive approach can help change the gender norms that channel benefits to men farmers only, and ensure that women and men benefit equally from the co-developed varieties (Galie et al. 2017).

Availability of quality seed: In the right place, at the right time, for both women and men

Farmers need quality seeds in their rural, often very remote areas at the right time—before planting in the case of crops. This timely availability is often a key challenge, particularly for women whose mobility is restricted by gender norms. Where formal seed distribution channels may not reach the most marginal rural areas, informal systems—making seeds available through family and kinship networks and local markets—can play an important role. Yet informal systems—used more often by women—may also fail to provide enough quality seed at the time of planting.

Local institutions such as seed banks, cooperatives, and small seed enterprises can bridge this gap by decentralizing seed multiplication. These institutions not only improve seed supply for their communities, but also generate local employment and income, creating opportunities for development of gender-responsive seed systems. Involving women in seed production and management gives access to varieties that better meet their needs, generates extra income, and contributes to women’s empowerment (Mudege et al. 2020).

Unfortunately, systemic gender inequities and community bias prevent women from reaping full benefits of such initiatives (Nyantakyi-Frimpong et al. 2019). Women tend to have limited access to finance and seed processing machinery, are often unable to attract and retain skilled labor, and may suffer from delayed payments for their services. A societal bias against women in business may be further aggravated by the lack of husbands’ support and the heavy burden of domestic work and other care responsibilities.

Access to quality seed

Access to seed is the ability to acquire seed, as well as to receive reliable information about how and where to obtain it. Access is influenced by seed affordability and delivery mechanisms, intrahousehold dynamics, and seed users’ mobility and networks. For instance, women may have less access than men to the formal-sector seed sold in a local shop if they lack transport to get there and carry the seeds,

cash or bargaining power to buy their preferred seeds, or knowledge about the availability of the seed, as women are not always targeted (effectively) by formal sector institutions, such as extension services or mass media.

Farmer-managed systems reach women more easily, as they circumvent barriers that women face when buying seed in the formal sector (Galiè et al. 2017). They allow women to use other means to obtain seeds, for instance through seed or labor exchange, gifts, and credit (McGuire and Sperling 2016), and at more affordable prices (Mudege and Torres 2017). At the same time, informal information channels, rooted in local social networks, are often biased against women (especially young women), and this may interact with intrahousehold dynamics. For example, in Malawi, women would obtain potato seed from trusted farmers within their communities, in part to avoid husbands blaming them for crop failures due to poor-quality seed (Mudege et al. 2016).



Innovations are emerging to improve women’s access to seed, including public subsidies and seed voucher programs prioritizing women (Mudege et al. 2018)—although these are criticized for creating artificial markets and increasing aid dependency. Private seed companies are employing new marketing efforts, including demonstration plots by women in locations accessible to women, videos featuring not only men but also women as their clients, and smaller packaging, which may better meet the needs of women, who often require less seed. However, the cost effectiveness and sustainability of these methods remains to be seen. So far, such marketing efforts have focused mainly on commercial crops and varieties for which profits are assured, not on open- or self-pollinated crops, for which farmers are less likely to buy new seeds.

Use, control, and benefits

Seed use and control refers to individuals' ability to decide what seeds to source, when, and how to use them, and then how to use the associated benefits and income. Legal regimes may regulate who can sell or replant seed. Global regulations around patents and property rights may disenfranchise women from claiming rights over seed unless they explicitly protect the rights of women farmers to access and share the benefits of genetic material (Galiè 2013).



Women play a central role in farmer-managed (informal) seed systems. Women's decisions on acquisition and use of seed are important, given their roles as household managers and custodians of seed (Khan et al. 2016). But there is little systematic evidence on gendered decision-making regarding seed use within households. Decision-making varies across crops and varieties, often in relation to market orientation. Women in Tanzania and Ethiopia, for instance, have control over seed use for food crops but not for cash crops (Amri 2010). When women do not control the income from crop sales, this may affect their ability to purchase seed (Mudege et al. 2018). Further, when different household members control the seed and the benefits from that seed, this misalignment can lead to inefficient decision-making.

EVIDENCE GAPS AND RESEARCH PRIORITIES

For women to be fully engaged in and benefit from the modern formal and informal seed systems, many structural barriers and harmful gender norms must be overcome. Building on Puskur et al. (2020), we propose a forward-looking research-for-development agenda to inform the design and implementation of gender-responsive seed systems and seed policy.

Gender dynamics and norms in seed systems

Understanding the local social and gender context is critical in designing seed systems that allow equitable access to seeds and that empower women as users, producers, or traders of seed. Seed system design should be based on a systematic analysis of gender roles and dynamics and the social norms and power relations at play that determine availability, access, and use or benefits from quality seeds. This includes considering not only institutional dimensions of gender relations, such as the extent to which women's involvement in seed management, production, and use is recognized and valued, but also gender norms regarding expected and appropriate roles, behavior, voice, and mobility of women. The analysis should also consider whether and how women's involvement in seed management translates into women's empowerment. The answer to these questions is likely determined by community norms and practices, customary laws, and formal policies and laws.

Of note is that CGIAR recently started to include livestock (beyond forage) and fish as part of seed systems. A new research agenda on gender dynamics and livestock seed needs to reframe the existing body of work on livestock-related gender issues in light of the seed systems discourse.

Analyze gendered impacts of innovative seed systems development approaches

Most previous research has focused on diagnosing where the gender gaps are in seed systems; less effort has been made to understand how to sustainably reduce these gaps. Seed policies developed without a gender lens could negatively impact women's ability to access seed, and gender-responsive programming could generate positive results, but these outcomes need to be documented.

A promising gender-responsive innovation is integrated seed sector development (Louwaars et al. 2013). The Integrated Seed Sector Development (ISSD) Africa program aims to build stronger linkages between formal and farmer-managed systems to generate synergies between the two. The formal sector could for instance tap into informal social networks for diffusion of certified quality seeds, and work with local "agripreneurs" to multiply the seed. To enhance understanding of how this integrated approach benefits women and men, the ISSD Africa program has prioritized these questions in its theme on [Gender and Seed Systems](#).

We also need to know more about other innovations in agricultural value chains, not all directly related to seed systems development, that could help overcome gender-specific barriers in accessing quality seeds. Promising areas include initiatives that help advance financial inclusion and improve access to financial instruments (savings, credit, insurance); those that bundle seeds with other agricultural inputs; social and behavioral change communication to influence constraining gender norms; and those that strengthen value chains, linking farmers with markets that provide better prices for their produce. Whether these innovations are indeed gender-responsive when promoting seed security remains to be tested (Brearley and Kramer 2020).

Gender-disaggregated seed systems indicators

Research on how to strengthen seed systems must focus on which innovations not only reach but also benefit and empower women and men equally (Johnson et al. 2018). To support such analysis, data collected on seed system development need to be sex-disaggregated, focusing not only on a gender comparison based on the sex of heads of household, but also on the majority of men and women who live in households headed by men.

Opportunities exist for collecting gender-disaggregated data at scale. The [Access to Seeds Index](#), a Sustainable Development Goals (SDGs) benchmark published by the World Benchmarking Alliance, evaluates and compares private seed companies according to their efforts to improve access to quality seeds for smallholder farmers. However, the index does not provide gender-disaggregated data, nor does it include some crops that may be important for women, such as vegetatively propagated crops or varieties important for nutrition and livestock. If such

data were added, the index could help inform national governments and development actors in designing gender-responsive seed policies.

Flip the question

It is important to ask what seed systems can do for women, not just what women can do for seed systems. How should the formal seed sector reinvent itself to be more relevant to women seed users—including understanding and responding to women's preferences and needs; designing effective information delivery channels; and enhancing the capacity of women to use the seed and benefit from it? How can seeds be made more affordable to smallholders, especially women farmers? What innovations and incentives can best support women seed entrepreneurs and producers, including gender-responsive financial products, capacity development, and policies?

There are other opportunities to integrate gender into global seed system development frameworks and initiatives. However, the gender transformational potential of seed systems remains under-researched. Interventions designed to systematically test the impact of gender-responsive approaches on women's empowerment are now the most pressing need; gender equality and women's empowerment should be the next frontier for seed system development.



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ACKNOWLEDGMENTS

Research summarized in this brief has been undertaken as part of the [CGIAR Research Program on Policies, Institutions, and Markets \(PIM\)](#) led by IFPRI and supported by the [CGIAR Trust Fund](#) and through bilateral funding agreements. We are also grateful for funding from the [Integrated Seed Systems Development Africa](#)

program, the [Netherlands-CGIAR research program for Seed Systems Development](#), and the [CGIAR Research Program on Livestock](#).

Authors are grateful to Evgeniya Anisimova, Cheryl Doss, Pamela Stedman-Edwards, and Rhiannon Pyburn for valuable editorial and publication support.

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This publication has been prepared as an output of the CGIAR Research Program on Policies, Institutions, and Markets (PIM) led by IFPRI and has not been independently peer reviewed. Any opinions expressed here belong to the author(s) and are not necessarily representative of or endorsed by IFPRI, PIM, or CGIAR.

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