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List of Abbreviations

A-CSE	Aspiring Cassava Seed Entrepreneur
AFF	Area Field Facilitator
BASICS II	Building an Economically Sustainable, Integrated Cassava Seed System, Phase 2
BEST	Building an Economically Sustainable Seed System in Tanzania for Cassava
CHAWA	Chama cha Wazalishaji mbegu (Cassava Seed Producer Association)
CSE	Cassava Seed Entrepreneur
GALS	Gender Action Learning System
IITA	International Institute of Tropical Agriculture
MEDA	Mennonite Economic Development Associates
ODK	Open Data Kit
QDS	Quality Declared Seed
SACCOS	Savings and Credit Cooperative Societies
TARI	Tanzania Agricultural Research Institute
TOSCI	Tanzania Official Seed Certification Institute
VICOBA	Village Community Bank
ZM	Zonal Managers

Introduction

Background to the BEST Cassava project

Since its inception in 2017, the Building an Economically Sustainable Seed System in Tanzania for Cassava (BEST Cassava) project has aimed to increase agricultural productivity and farm income of smallholder cassava farmers through access to improved seed varieties. By catalyzing demand-driven private sector models and public-private partnerships, the project strengthens commercialization of the cassava seed supply chain by delivering officially released varieties to farmers through a network of government-certified commercial Cassava Seed Entrepreneurs (CSEs) (at basic, certified, and quality declared seed (QDS) levels) located throughout the primary cassava growing regions of Tanzania. Implemented by Mennonite Economic Development Associates (MEDA), in partnership with the International Institute of Tropical Agriculture (IITA), the Tanzania Agricultural Research Institute (TARI) and the Tanzania Official Seed Certification Institute (TOSCI), the BEST Cassava project works to ensure availability and accessibility of quality-assured and disease-resistant seed for smallholder cassava farmers.

Women and men tend to have different patterns of cassava use in cassava-producing regions; traits favored by men and women often differ according to gender roles, with an impact for their varied acceptance and adoption of improved varieties.¹ Notwithstanding increased efforts in these regions to assess gendered preferences, needs and constraints within the cassava seed system, the BEST Cassava project did not incorporate a gender lens when designing its approach in Tanzania. Because the project did not target gender gaps and barriers through its activities, CSE recruitment through the project tended to favor men. As of mid-2020, women comprised only 24% of the CSEs recruited and trained by the project despite their considerable involvement in both cassava production and post-harvest activities in Tanzania.²

As cassava crops become commercialized, the resulting lucrative opportunities tend to attract the attention and control of men, while women tend to lose control over cassava products and any income they may generate through subsistence or semi-subsistence production.³ In an effort to address this trend, an in-depth gender study was conducted to inform how the development of the cassava seed supply system in Tanzania can better reach, benefit, and possibly empower women through a more holistic, inclusive approach as the BEST Cassava project transitions into the Building an Economically Sustainable, Integrated Cassava Seed System, Phase 2 (BASICS-II) project in 2022. This report presents the findings from the study, along with recommendations to inform how the CSE approach could be modified.

Objectives of the study

The main objective of the gender study was to identify the key barriers and success factors that women face in becoming CSEs and benefiting from their CSE work. The specific objectives of the

¹ Teeken, B., Olaosebikan, O., Haleegoah, J. et al. Cassava Trait Preferences of Men and Women Farmers in Nigeria: Implications for Breeding. *Econ Bot* 72, 263–277 (2018). <https://doi.org/10.1007/s12231-018-9421-7>

² Masamha, B., Thebe, V., and Uzokwe, V.N.E. (2018). Mapping cassava food value chains in Tanzania's smallholder farming sector: The implications of intra-household gender dynamics. *Journal of Rural Studies*, 58, 82-92. <https://doi.org/10.1016/j.jrurstud.2017.12.011>

³ Mwaseba, D.J.B., and R. Kaarhus. 2015. "How Do Intra-Household Gender Relations Affect Child Nutrition? Findings from Two Rural Districts in Tanzania." *Forum for Development Studies* 42(2): 289–309. <https://www.tandfonline.com/doi/abs/10.1080/08039410.2015.1020337>

study were to 1) explore why the project did not reach an equal number of women and men when recruiting CSEs, 2) understand the experiences of women (and men) who were selected to operate as CSEs during project implementation, and 3) determine the specific factors that helped create conditions for women to thrive in their seed production businesses over the course of the project. Another specific objective of the study was to develop a set of recommendations from the findings to help modify the current approach to recruiting, training, and supporting CSEs to be more gender-responsive and transformative.

The project's approach to the recruitment, training, and support of CSEs

The CSE recruitment, training, set up, and support approach adopted by the BEST Cassava project follows a sequence of events summarized below and depicted in Figure 1.

Table 1. CSE selection criteria

Criterion ⁴	Description
<i>Availability of land</i>	Access to appropriate land with isolation distances ⁵ from other nearby cassava fields as per the Tanzania Official Seed Certification Institute (TOSCI) requirements
<i>Financial resources</i>	Have the financial resources required to establish and manage the seed multiplication field. On average, a CSE needs to have Tsh 500,000-600,000 for one acre of cassava seed multiplication.
<i>Business acumen and record keeping capacity</i>	Aptitude and business mindset with a desire to create a sustainable seed business and commitment to record keeping of the cassava seed business
<i>Proximity of land to roads</i>	Reasonable proximity to well-trafficked roads for marketing and demonstration plots
<i>Training interest</i>	Willingness to attend training prior to starting seed production
<i>Farming acumen</i>	Willingness and aptitude to abide to cassava seed agronomy requirements

- 1. Conduct village information meetings** – Area Field Facilitators (AFFs) and Zonal Managers (ZMs) organize and conduct meetings in target communities to inform farmers about the opportunity to produce improved cassava seed. They share information about the selection criteria and create awareness about the overall recruitment process. Criteria were developed and used by AFFs and ZMs to select farmers to become CSEs. The selection criteria are presented in Table 1.
- 2. Determine appropriate varieties** –Based on the agro-ecological zone and end-user preference in the region.⁶

⁴ Additional criteria include: Registration with regulatory body – specifically, a farmer's willingness and capacity to register as a seed dealer with the TOSCI.

⁵ Isolation distance is recommended for prevention of virus infections in cassava crops. In line with TOSCI requirements, isolation distance in the BEST Cassava project varied depending on the level of certification sought. For pre-basic seed production, the minimum isolation distance is 300m; for basic, 200m; for certified or commercial, 100m; and for quality declared seed (QDS), 50m.

⁶ New varieties are selected based on agroecological fit and through market research conducted by TARI, in consultation with farmers, CSEs, project partners and the private sector. However, it is unclear whether specific effort is made to understand if there are different varietal preferences among men and women.

3. **Establish a basic seed multiplication site and locate starter (basic) seed stem source** – The source of starter seed comes from TARI.
4. **Recruit certified and QDS-level cassava seed entrepreneurs (CSEs)** – Once a basic seed source has been identified, CSEs are then recruited, via a screening process, to make the system complete.
5. **Train CSEs** – The recruited CSEs are then trained on cassava seed agronomy and business to ensure proper production and business skills. Training on seed production is also a prerequisite for CSEs to be registered by TOSCI.
6. **Register CSEs** – Before they can start producing seed, CSEs need to be legally registered with TOSCI to be recognized as seed dealers.
7. **Land preparation** – After fulfilling all legal requirements with assistance from the AFFs and ZMs, CSEs prepare their farms for planting and stem production.
8. **Mentor and monitor CSEs** – AFFs and ZMs keep close supervision and maintain support to CSEs, including support marketing their improved seed.

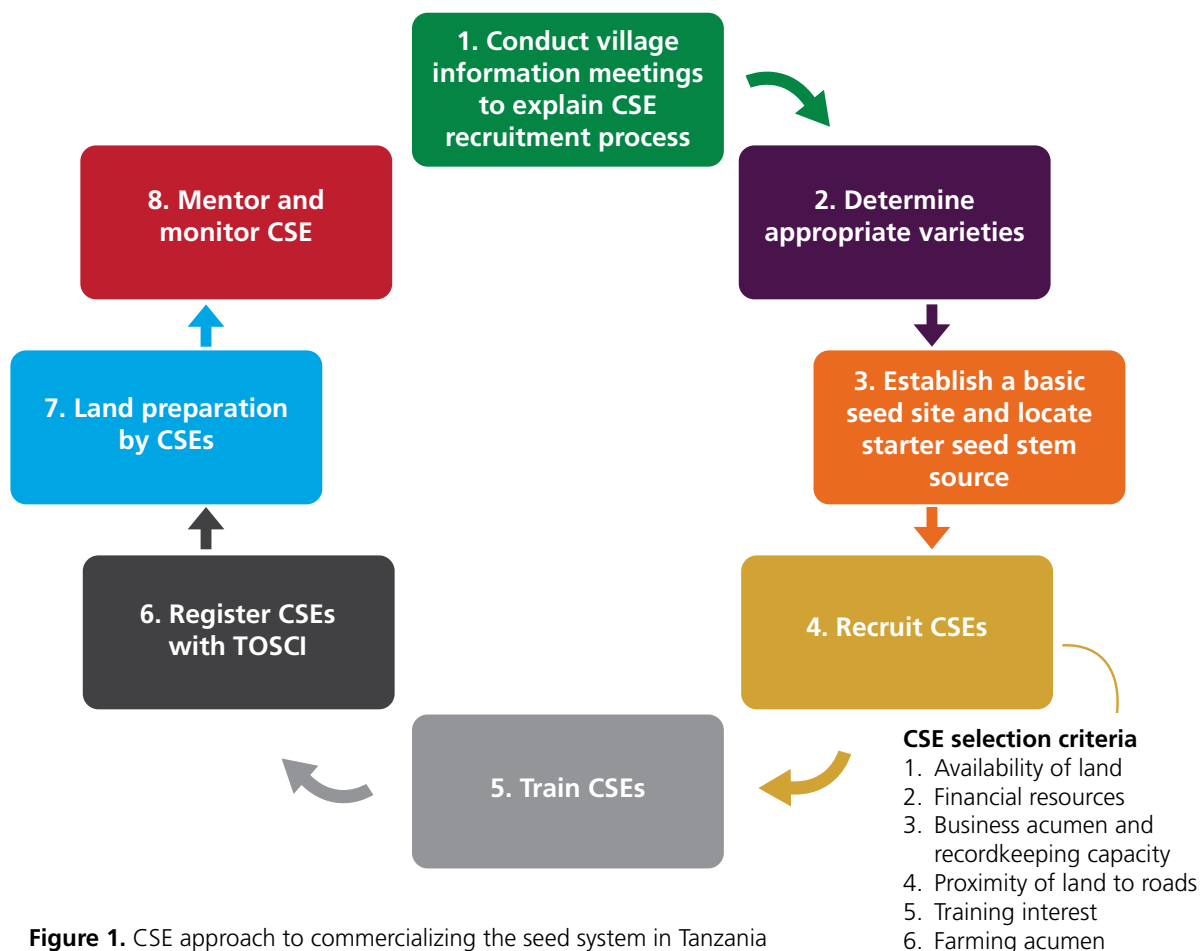


Figure 1. CSE approach to commercializing the seed system in Tanzania

Study methods

Study location and target groups

The study was carried out in the Southern, Eastern and Lake Zones of Tanzania covering 11 cassava growing regions, including Mtwara, Lindi, Ruvuma, Morogoro, Coast, Tanga, Mwanza, Mara, Geita, Kagera, and Kigoma. The study was conducted in February and March 2021 and targeted two main groups during interviews: 1) women and men farmers who are currently operating as CSEs in the project; and 2) women and men farmers who were referred by the District Council for consideration as CSEs, but who were not selected due to not meeting certain selection criteria. In this study, we refer to this latter group as Aspiring CSEs (A-CSEs). The study also interviewed AFFs and ZMs (referred to hereafter as AFFs) employed by the project to recruit, train, and support CSEs.

Data collection tools

The study employed a mixed-methods approach to collect the data using two qualitative interview guides and one quantitative survey instrument. The survey tool was administered to both CSEs and A-CSEs to better understand potential gendered barriers to CSE recruitment.⁷ The first qualitative tool complemented the survey instrument and was used to collect more detailed information from a small group of CSEs who were selected for survey interviews and who were categorized by AFFs prior to the start of the study into two groups: successful and not-so-successful.⁸ The second qualitative tool assisted the research team in carrying out interviews with AFFs, and specifically, asking about their experiences working with and supporting CSEs to gather their perspectives on CSE success factors and the barriers that female and male CSEs face.

Sampling strategy

A proportionate stratified random sampling strategy was used to draw a total sample of 298 farmers (218 CSEs and 80 A-CSEs) from a total population size of 465 CSEs and 120 A-CSEs, based on 95% confidence level and 5% margin of error. The populations were stratified according to the zone of operation of the project (Southern, Eastern, or Lake Zone) and the total numbers of male and female CSEs/A-CSEs in each zone. The sample distribution of interviewed respondents by zone was 79 for Southern Zone, 163 for Lake Zone, and 56 for Eastern Zone (see Figure 2). Of the 218 CSEs sampled, 169 were male and 49 were female. Of the 80 A-CSEs sampled, 50 were male and 30 were female.

⁷ The quantitative assessment measured, for example, access to productive and financial resources and services, training and skills building opportunities, CSE/A-CSE abilities and freedom to move about freely and make certain decisions, and aspects of how they allocate their time.

⁸ Current CSEs were distinguished in the study as being either 'successful' or 'not-so-successful', according to criteria for success provided by AFFs. CSEs were considered successful if they 1) passed TOSCI certification, 2) managed to expand the size of their cassava seed fields during the project lifespan, and 3) made some sales/profit since starting their seed production businesses. Those considered not-so-successful did not meet these criteria.

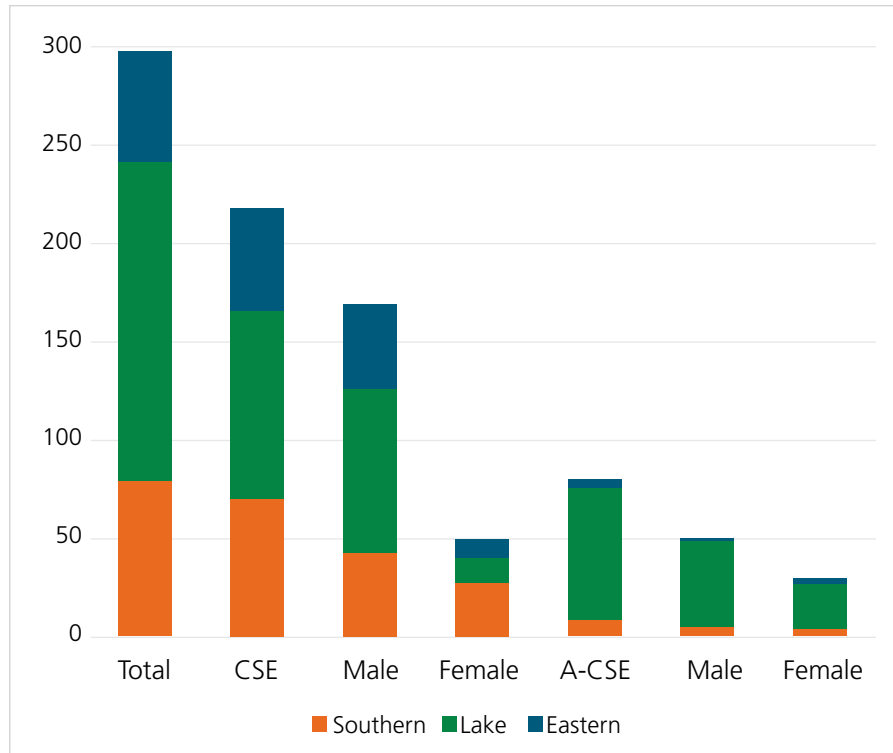


Figure 2. Total sample of CSEs and A-CSEs included in the study, by zone and sex

For the qualitative interviews, all 13 AFFs (11 men, 2 women) employed by the project were interviewed. A total of 30 CSEs were interviewed for in-depth, semi-structured interviews (22 men [of which 13 were categorized as successful] and 8 women [of which 5 were considered successful]). Out of 30 CSEs, 11 were from Lake Zone and Southern Zone each, while 8 were from the Eastern Zone.



Figure 3. Photographs depicting interviews with CSEs (a) in Mtwara; and (b) in Kagera

Data entry and analysis

All quantitative data collected using the open data kit (ODK) option were uploaded on to a server via an internet connection each evening as the team returned from the field, while all qualitative data were recorded using a designed template and digitized with help of the tape recordings during and after the field research. Quantitative data were analyzed using Stata (version 16.0). Descriptive statistics are presented below along with the results from t-tests that determined if there were statistically significant differences between the means or percentage points of the variables under examination of different groups. The qualitative data were analyzed using QDA Miner Lite. The qualitative analysis entailed coding and extracting significant information from the transcribed interviews.

Key Findings

The results from the qualitative analysis are presented alongside quantitative results in the following section. These findings are divided broadly between two major themes; first, observations around the criteria used to select CSEs (section 3.1) and second, observations surrounding the factors that made existing CSE women successful in their businesses (section 3.2).

Gender differences across the BEST Cassava CSE selection criteria

CSEs were recruited through village meetings and district council references, and then assessed and selected based on a set of criteria developed by the BEST Cassava project, in accordance with TOSCI standards for cassava seed growers. Data collected from CSEs and A-CSEs have helped broaden an understanding of the gender differences that may have prevented women A-CSEs from meeting the criteria for selection. Results from the data analysis can be found below.

Availability of land

To become a CSE, the BEST Cassava project required that farmers have access to appropriate land sizes for cultivation, and that they be able to ensure minimum isolation distances (> 50m) between their own cassava fields and those of nearby farmers, as per TOSCI requirements.

Analysis of the quantitative data collected showed clear gender differences between the sizes of household land used for agricultural production (in acres⁹) held by women and men study respondents overall (8.0 acres for women versus 14.6 acres for men, $p = 0.0001$) and in the CSE (9.1 acres for women versus 15.5 acres for men, $p = 0.005$) and A-CSE (6.3 acres for women versus 11.2 acres for men, $p = 0.022$) groups. Over 46% of farmers surveyed reported owning their land jointly with their spouse, while 45.6% responded that they are sole owners of their land, and 8.2% indicated that they cultivate land that is owned by someone else in or outside their household. Married respondents were less likely to indicate sole ownership of land compared to those who are not married (42.4% versus 71.9%, $p = 0.002$).

Qualitative data demonstrated that where land is held jointly by married couples, women may face challenges exercising agency around cassava seed production. AFFs indicated that men are traditionally the main custodians of land in rural Tanzania and that married women tend to have less input on decisions concerning which part of their family's land holdings to use for a given

⁹ Three (3) outliers (all male) were removed from this analysis given their large landholdings of 200 acres.

purpose. Furthermore, lack of ownership of land may help create the conditions for male capture of CSE opportunities and discourage women from pursuing work as a CSE. As one AFF commented,

“Land is owned by men in the family. In this case, when we recruit CSEs, the woman will automatically leave the opportunity to her husband to attend the meetings that we organize to sensitize farmers. The husband will listen to us and if he wishes, he may allow his wife to be the CSE, or else, he will seize the opportunity” (AFF, Eastern Zone).

Female CSEs who were considered successful by AFFs (most of whom were married), did not mention lack of access to or ownership of land as a primary constraint to engaging in their ongoing CSE work. However, land access was a key constraint mentioned by female CSEs who were considered not-so-successful. One AFF provided an example of the kind of challenges faced by women who do not own land when starting up their seed production businesses,

“There are cases where women rent land, which is usually not cleared, bushy so to speak. So, when they clear and use it in one season, more often than not, the owners tend to claim back their land because it is already clean. So, the next season, they struggle to find another piece of land for their CSE work. However, most of them resort to purchasing land of their own from the money they get after selling the seed and they usually become successful” (AFF, Southern Zone).

Regarding the requisite isolation distance for CSE eligibility, CSEs expectedly were significantly more likely than A-CSEs to meet the >50m requirement ($p < 0.001$). Female CSEs were more likely than men to report that their fields are too close to other cassava fields to meet this selection criterion ($p = 0.016$). Qualitative interviews with CSEs showed that about one-third have faced challenges adhering to the minimum isolation distance. CSEs especially noted the challenge of convincing other farmers nearby not to plant close to their cassava seed fields, with one female CSE recounting how she had to pay a neighbor to stop growing cassava nearby her cassava seed field so that she could meet the required isolation distance:

“It is very difficult to tell another person not to plant cassava on their own farm because you want to meet the isolation distance [requirement]” (Female CSE, Lake Zone).

Selection criterion: availability of land

Conclusions:

- Availability of land for women and their ability to make decisions on using that land for cassava seed production constitute key barriers to becoming and operating successfully as CSEs.
- Women are more likely than men to face difficulty adhering to minimum isolation distances for CSE selection; they report specific challenges exercising the authority to convince neighboring cassava farmers not to plant nearby.

Financial resources

According to the CSE selection criteria, eligible farmers needed to show that they have access to financial resources (an average of Tsh 500,000 -600,000 per acre) that would enable them to establish and manage the seed multiplication field.

Around 70% of A-CSEs indicated they could invest in agriculture-based businesses requiring more than 500,000 Tsh from the income they generate, as compared with 88.3% of CSEs ($p < 0.001$). No gender differences were found across the total sample or in the CSE or A-CSE group. However, among CSEs, a larger portion of women were classified as having the lowest wealth status¹⁰ at 27% versus only 14% of men ($p = 0.043$). A large percentage of women A-CSEs (33%) were classified as having an average wealth status (Quintile 3) and very few women A-CSEs came from the highest wealth quintile group (at 7% only) compared to the other sub-groups (e.g., female CSEs at 29%, $p = 0.019$).

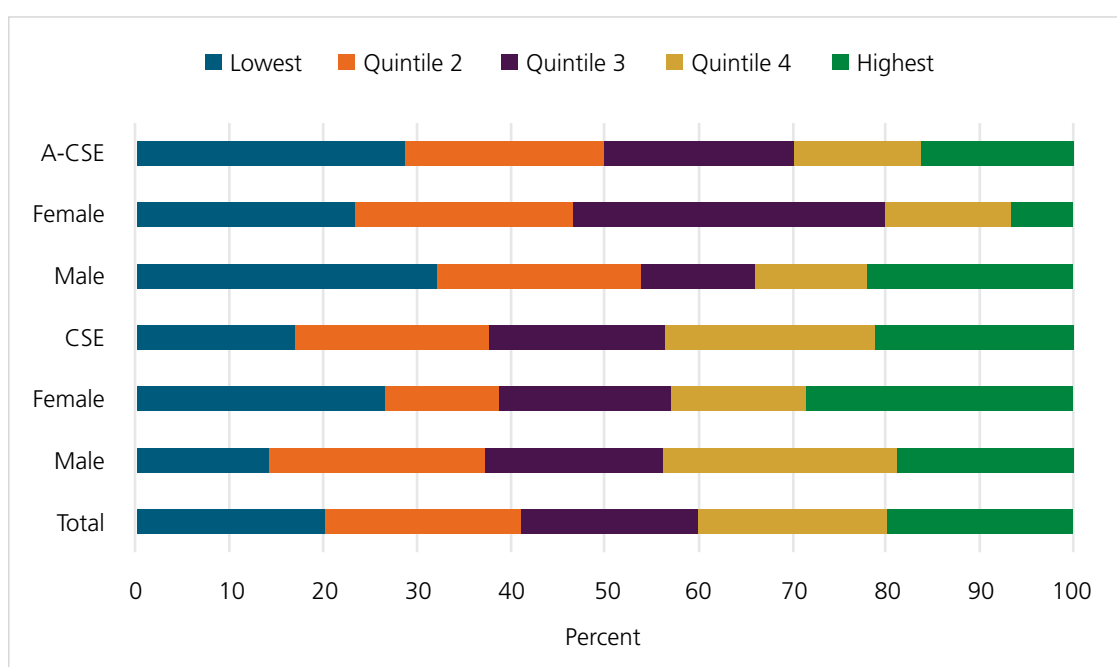


Figure 4. Sample of CSEs and A-CSEs surveyed, by wealth quintile

Regarding borrowing habits, only 29.2% of the respondents surveyed indicated that they (or someone in their household) borrowed money over the past year, with the majority (65.5%) indicating that they borrowed from VICOBA (Village Community Banks). A greater percentage of

¹⁰ Wealth quintiles were developed using principal component analysis (PCA) using eleven asset variables: ridger, diesel pump, watering can, shade tent, bicycle, motorcycle, car, radio, refrigerator, television, and sofa (couch). After running the PCA, the first component was chosen to use as the wealth variable as it accounted for the largest proportion of the variance (eigenvalue = 2.8; % of the variance = 25.8). The wealth variable was then ranked into quintiles, dividing CSEs and A-CSEs into roughly 5 equal groups. Finally, the wealth variable was used to create five binary variables representing the lowest to highest wealth quintile groups.

women A-CSEs indicated that they borrowed money over the past year compared to men A-CSEs (36.7% versus 12.0%, $p = 0.009$).¹¹

Qualitative interviews with CSEs confirmed both the importance of having capital and the challenges CSEs face trying to access capital from financial institutions. Around half of the CSEs who took part in the qualitative interviews identified having a lack of access to capital as a key constraint to running their seed production businesses. As one female CSE explained,

“Capital is the most difficult part because capital is needed in preparation of land and the seed [production] too needs capital. So, without capital, it is very difficult” (Female CSE, Lake Zone).

Interviews with AFFs highlighted their strong views that married women in particular face challenges when making business and financial decisions on their own – this, due largely to their dependence on their husbands for financial support. In circumstances when married women lack their own resources to move forward with their activities, it was explained, they will delay planting or starting their business for the whole season until they raise adequate capital to carry out the work on their own terms. As one AFF commented,

“A married woman cannot venture into cassava seed business without the approval of the husband. [Married women] do not make decisions on their own without consulting their spouses” (AFF, Eastern Zone).

Selection criterion: financial resources

Conclusions:

- Although no gender differences were found in terms of women and men farmers' reported ability to access the required start-up capital to become a CSE, a larger percentage of women cassava farmers tend to have a lower asset base than men on average, reflecting their lower economic/wealth status.
- Women – and particularly, married women – may be largely dependent on their husbands for financial support, which can inhibit their ability to start up a new business or make financial decisions autonomously.
- Few cassava farmers borrow money from formal or informal institutions, reflecting in part their inability to access finance for their seed businesses or other matters. Women cassava farmers may have a specific need for adapted financial services, as they proportionately depend more on village savings and lending groups than men.

¹¹ It is important to note that borrowing from VICOBA is not an indicator of financial status in and of itself. VICOBA tends to target women, and especially women in rural areas who find it difficult to borrow/save using more formal sources such as commercial banks. This may explain why women A-CSEs have more interaction than other groups.

Business acumen and record-keeping capacity

The BEST Cassava project required that farmers demonstrate capacity for understanding and managing business-related risks and opportunities (business acumen) and commit to record-keeping if selected as CSEs. Previous education, business skills training and literacy were all considered in assessing this criterion.

Analysis of quantitative data showed that all female CSEs indicated they had some primary, secondary, or tertiary education, while 13.3% of women A-CSEs reported that they had not attended any formal schooling in the past ($p = 0.008$). Only 2% of men A-CSEs and zero male CSEs reported having no formal education. Only 55% of the A-CSEs (60% women versus 52% men) indicated they received previous training in business development and better agricultural management practices, potentially explaining in part why they were not selected to become CSEs.

Gendered social norms around women's responsibilities and capabilities were found to influence beliefs and attitudes about women's business acumen. Several male CSEs who were interviewed expressed doubt as to whether women can be as skilled at business endeavors as they are, because of expectations around women's responsibilities for household and family-related tasks.

"Men are more skilled [at business] ...Men are the managers of the household. Women are just taking care of the family so they can't focus on business" (Male CSE, Southern Zone).

Prevailing attitudes about women's business acumen may influence the self-perception and self-confidence of female CSEs, as well. As one female CSE related,

"A male has his goals, maybe being more successful than the neighbors. For a female, it is different. You can have goals and not reach them because something in the middle distracted you. For example, myself, I am easily seduced by customers. I can even sell the seed for the amount that is not even reasonable" (Female CSE, Southern Zone).

Selection criterion: business acumen

Conclusions:

- Assessing business acumen based on previous formal education and business skills training may constitute a barrier to becoming a CSE, particularly for women, who may be less likely than men to have attended formal schooling.
- Norms and attitudes around women's business capacities can negatively influence the enabling environment for women's engagement in CSE and other entrepreneurial opportunities and may influence women's own self-perceptions when it comes to their business acumen.

Proximity of land to roads

To become CSEs, farmers were required to show that their fields were nearby well-trafficked roads to market their product and ensure easier access to their cassava seed. 67% of respondents sampled indicated their cassava fields are near well-trafficked roads. No significant gender differences were found.

Selection criterion: proximity of land to roads

Conclusion:

- The selection criterion of proximity to roads did not create specific barriers for women in becoming CSEs.

Training interest

As part of BEST Cassava's selection criteria, CSEs were expected to attend training prior to beginning seed production. The data suggests that even when women may be willing to attend training, their ability to do so may be compromised.

A greater percentage of women across the sample and in CSE and A-CSE groups work more hours (> 4 per day) performing unpaid (domestic) work compared to men ($p < 0.001$), with a far greater percentage of women A-CSEs engaging in such work for long hours (46.7%) compared to female CSEs (18.4%) ($p = 0.007$).

During qualitative interviews, few female CSEs indicated that they find it difficult to secure permission from their husbands to travel freely outside the home. This is supported by the fact that a greater percentage of women (81.0%), and female CSEs in particular (79.5%), indicated they take more trips per month to the market to sell produce (≥ 1 trip daily, weekly or bi-monthly) than men at 62.3% and 61.7% for male CSEs ($p < 0.05$). Furthermore, no significant differences between women and men in the CSE group were found concerning the number of trips they take to attend meetings in or outside their communities, including overnight trips outside their communities. Nonetheless, one female CSE confirmed during qualitative interviews that gender norms around women's mobility create difficulties for women to travel, stating,

“It is easier for men to travel freely but it is difficult for women to get permission from their spouses” (Female CSE, Lake Zone).

During qualitative interviews, several male CSEs demonstrated particularly inequitable attitudes toward women's rights to travel freely. One male CSE asked,

“My wives should remain at home taking care of the family, so if they travel frequently, who will take care of the family?” (Male CSE, Eastern Zone).

Another male CSE commented,

“Many marriages end up in divorce when women travel a lot. I don't know the source, but that happens a lot in our society. If a woman travels for a month, when

she comes back home, she might find her husband married to another woman”
(Male CSE, Lake Zone).

Selection criterion: training interest

Conclusion:

- While many women may be willing to attend training required for CSEs, for some, their ability to do so may be impacted by their disproportionate responsibility for carrying out domestic and care work (as compared with men), as well as by gendered social norms related to women’s mobility and freedom to travel.



Figure 5. Capacity building to CSEs – (a) Recruited CSEs attending an in-door training; and (b) Area Field Facilitator demonstrating to a female CSE how to plant cassava

Farming acumen

The greater share of the sample from the quantitative study grows cassava and maize as their main staple food crops. Smaller percentages of CSEs and A-CSEs indicated they also cultivate beans, ground nuts, cashew, and rice along with a range of other food and cash crops (see Figure 3).

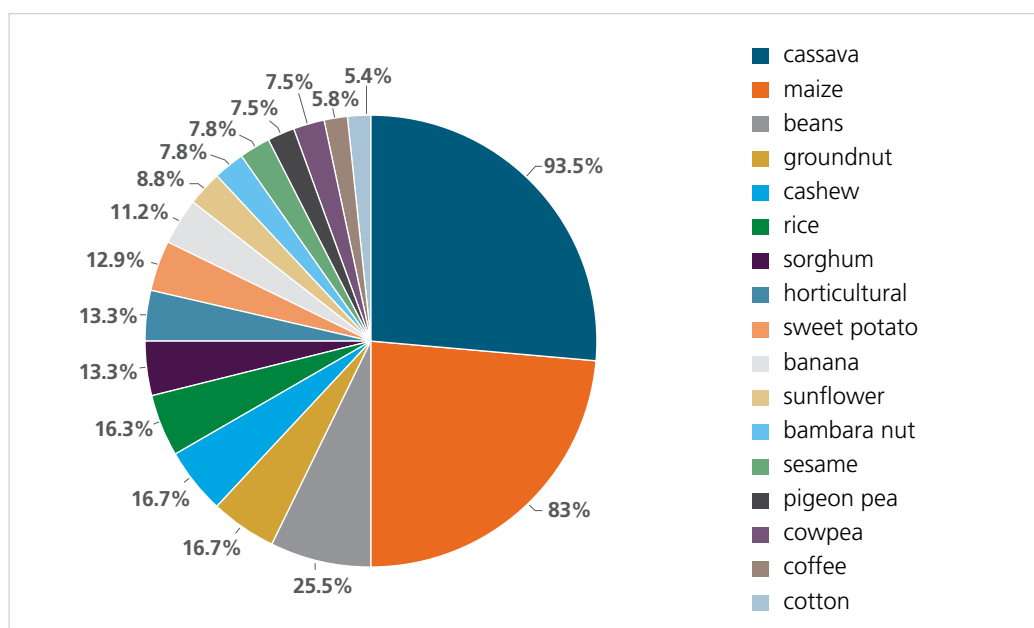


Figure 6. Percentage of study respondents growing different food and cash crops

As one measure of a farmer's ability to manage a farm and cultivate a range of crops for food and income-generating purposes, a farm diversity score¹² was developed. No significant differences were found between CSEs and A-CSEs regarding their mean farm diversity scores (3.7 versus 3.6, $p = 0.543$). Women's mean farm diversity score was lower than the score of men for the overall sample (3.6 versus 3.8, $p = 0.002$) and within the CSE group (3.1 versus 3.9, $p = 0.002$), but not within the A-CSE group (3.5 versus 3.7, $p = 0.423$).

Selection criterion: farming acumen

Conclusion:

- Overall, a wide range of food and cash crops are grown by women and men farmers in the study sample. Gender differences in mean farm diversity scores suggest that the households of especially female CSEs are constrained in their abilities to diversify their production. This may be explained by their increased involvement (i.e., increased labor) in cassava seed production, thus reducing their inputs into cultivating a greater variety of crops.

Success factors for female CSEs

Despite the gender barriers that the CSE selection criteria created for women to participate in cassava seed production in Tanzania, the approach used to commercialize the seed system has

¹² The score is the mean number of food and cash crops cultivated by a study respondent's household, with lower scores reflecting less farm diversity (see <https://www.indikit.net/indicator/202-farm-diversity-score>).

contributed to positive outcomes among female and male CSEs. Over 94% of CSEs surveyed indicated they generate income from the cassava seed they produce and sell, and most CSEs interviewed during the qualitative study affirmed that the income generated from their seed production businesses pays more than producing other crops, especially considering that they can sell both seed and roots, plus any cassava products that they are able to process.



Figure 7. Farmers with bundles of cassava planting materials (seed) purchased from CSEs

Beyond income-related benefits, both female and male CSEs indicated additional benefits accrued from their CSE work, including increased social status and influence, strengthened relationships with their colleagues and community members, and increased food security. For several female CSEs, the CSE approach offered an opportunity for strengthened self-efficacy, social capital, and empowerment. One CSE indicated that,

“There are other benefits [from being a CSE] apart from money. I meet new people, I have attended different seminars and trainings, and apart from working as a CSE, the whole cassava production has given me a chance to travel to different places. A lot of people are directed to me from the research station when they go there to seek for advice. They are told to look for me. This has increased my status in the society” (Female CSE, Southern Zone).

When another female CSE was asked about what she liked best about working as a CSE, she responded,

“Feeling like a super woman, as being a CSE is a huge responsibility. I dedicated a lot of my time ensuring the quality of the seeds so I can inspire other people” (Female CSE, Southern Zone).

Both female and male CSEs stated that, due to the knowledge they gained during CSE training and the increased income they have been able to generate through their seed production businesses,

they feel their abilities to influence household decisions regarding CSE tasks and household finances had increased. One female CSE explained that,

“As the income increases, so does the ability to influence decisions” (Female CSE, Lake Zone).

In pursuit of recommendations that could increase the number of female CSEs and help ensure they benefit and are empowered through their work as CSEs, the following success factors were identified.

Access to hired labor

CSEs emphasized during qualitative interviews that access to hired labor is a prerequisite for effectively carrying out their tasks as seed producers. While nearly all female and male CSEs indicated they hire labor to support them, only about half reported that they rely on unpaid family labor to do their CSE work. While there were no observable differences between female and male CSEs in seeking support from hired labor, a greater proportion of women than men mentioned that they rely on unpaid family labor.

Like men, the success of a female CSE can be partly linked to her ability to access capital to hire labor. As discussed in previous sections, a limit on women’s success as a CSE may be traced not to their lower physical capacity to do the work, but to their lower economic status and autonomy, as compared to men. As one female CSE noted,

“The problem is capital; if I had capital, I could hire casual laborers to help me” (Female CSE, Southern Zone).

Yet, male CSEs broadly disagreed that women can be successful as CSEs, since the associated tasks include hard labor that they believe women are not physically capable of doing on their own.

Selection criterion: access to hired labor

Conclusion:

- Despite the persistence of gender unequal attitudes that consider women incapable of carrying out the physical tasks associated with CSE work, both female and male CSEs are dependent upon hired labor to carry out their CSE activities. Female CSEs who have access to capital to hire labor have an increased chance of meeting criteria for success.

Support from spouses and/or other family members

Unsuccessful female CSEs were more likely than successful female CSEs to report negative reactions from their family members regarding their decisions to undertake cassava seed production. For men, negative family reactions were seldom cited and did not show correlation with their success as CSEs. Furthermore, female CSEs who were considered successful mentioned how important their spouse’s moral support is in encouraging them to continue with the work, especially in the face of

unfavorable and gender-biased reactions from community members. For example, a female CSE explained,

“At the community level, the response was negative. They thought my husband was not okay. It was like ‘how could he allow a woman to travel so far because of that?’ That is what held back most women. I am so grateful that my husband encouraged me, and he even told [the project] not to worry that he was sure that I could make it and he would assist me” (Female CSE, Lake Zone).

In response to a question on how her household members reacted to her working as a CSE, another female CSE said,

“They thought I would not be able to [do the job]. They told me to just give up, but I didn’t listen to them and decided to do what I thought was right” (Female CSE, Southern Zone).

Selection criterion: support from spouses and/or other family members

Conclusion:

- When undertaking CSE responsibilities, women may face negative, gender-biased reactions both within the home and community. Especially for female CSEs, moral support from spouses and family members is critical for their success.

Goal setting and decision-making power

Setting goals – a key module in the training provided to CSEs – was often mentioned by female and male CSEs as being a driver of motivation and perseverance in their work. The two-year goals of women and men did not differ significantly, with the expansion of cassava seed production, the diversification of agricultural activities, and the improvement of living conditions ranking high on both lists. As a female CSE put it,

“I want to be well recognized because of cassava. If anybody is talking about cassava anywhere, my name should appear there. I want to be the biggest producer” (Female CSE, Southern Zone).

There is also evidence that goal setting has links to decision-making. Whether goals are set by women, men, or jointly between spouses, it is often those who set them that have decision-making power and responsibility over the CSE activities that drive progress toward those goals. As one CSE related during qualitative interviews,

“I think [my ability to influence decisions] has increased because now I set the goals and I make sure we work to accomplish them” (Female CSE, Lake Zone)

Successful female CSEs especially cited feeling confident that they could influence decisions about CSE tasks (e.g., when to plant) and household financial decisions when they wanted to, despite

the power their spouses hold as heads of the family. Female CSEs who were not considered successful by AFFs were not as likely to indicate that they could influence such decisions when in disagreement with their spouses.

Selection criterion: goal setting and decision-making power

Conclusions:

- Setting goals is an important motivational factor for CSEs and can be linked with decision-making on production and household spending. Women who are involved in goal setting (either independently or jointly with spouses) are likely to have a role in leading or directing CSE activities toward chosen goals.
- Female CSEs considered as successful feel more confident in their ability to influence decisions at home and on the farm, compared with those considered as not-so-successful.

Access to social networks, productive groups and associations

During qualitative interviews, nearly all CSEs indicated that they are members of a CSE group or network or of some form of producer and/or village savings and loan association. All female CSEs indicated that they are members of a producer group. Most CSEs are members of cassava seed producer associations (CHAWA) supported by the BEST Cassava project, though there is indication that membership and participation fees for these associations may be prohibitive for some CSEs. VICOBA and Savings and Credit Cooperative Societies (SACCOS), as well as specific women's producer groups and chambers of commerce, offer CSEs additional networking and relationship-building opportunities.

Three-quarters of CSEs said that their network or group membership has helped them gain access to cassava seed clients. Some CSEs also mentioned that their membership in associations have helped them ensure quality of their products by providing them with access to guidance from reliable extension officers. No female CSEs reported having established relationships with input suppliers, whereas a select number of male CSEs did.

Selection criterion: access to social networks, productive groups, and associations

Conclusion:

- Access to networks and group membership represents an important source of support and connections for CSEs. Women, who are shown to have limited access to extension services and input suppliers, can particularly benefit from the advantages offered through these networks.

Recommendations

Transforming the CSE approach

Considering the above findings, this section makes recommendations of how the CSE approach to commercializing the cassava seed system in Tanzania can be modified to be more gender-responsive and transformative. The proposed modifications to the approach are especially relevant and timely as the BEST Cassava project transitions into the BASICS-II project in 2022. Alterations and additions to the approach, including the CSE selection criteria, will be necessary to ensure that more equitable, inclusive opportunities are created for women and to encourage the conditions that support women to thrive as CSEs, once selected.

Drawing from the 'Reach, Benefit, Empower, Transform' framework,¹³ the CSE approach can be re-imagined to **1) REACH** a greater number of women through better targeting and accounting for the key gender issues that prevent women from meeting the selection criteria to become CSEs; **2) BENEFIT** female CSEs through the innovations, capacity development initiatives, and other activities the project promotes and implements; **3) EMPOWER**¹⁴ female CSEs economically as respected and profitable seed producers in their communities; and **4) TRANSFORM** gender relations at household, community, and value chain levels to address the restrictive gender norms and power relations that limit women's decision making powers and control over resources that are essential for their success in producing improved cassava seed.



¹³ See Theis and Meinzen-Dick (2016) <https://www.ifpri.org/blog/reach-benefit-or-empower-clarifying-gender-strategies-development-projects> and the CRP FISH (2017) <https://digitalarchive.worldfishcenter.org/bitstream/handle/20.500.12348/1349/FISH-2017-13.pdf>

¹⁴ According to Golla et al. (2011: 4), "A woman is economically empowered when she has both the ability to succeed and advance economically and the power to make and act on economic decisions." See <https://www.icrw.org/wp-content/uploads/2016/10/Understanding-measuring-womens-economic-empowerment.pdf>

Key recommendations

Table 2 below contains five key recommendations for project implementors, which are designed to strengthen gender integration in BASICS-II and other cassava seed system development projects. Elaborated under each key recommendation are specific actions to reach, benefit, and empower women as cassava seed entrepreneurs and transform gender relations to create strong enabling environments for the cassava seed system to grow and flourish in Tanzania.

Table 2: Summary of Recommendations¹⁵

1 Modify CSE approach, set up and selection criteria to be more gender responsive

- [R]** Carry out a social and gender analysis before beginning community engagement activities to inform the recruitment process and selection criteria to ensure they are gender responsive and context specific. Specific suggested modifications to the BEST Cassava CSE selection criteria are found in **Table 3** in the Annex.
- [R]** Ensure market research includes understanding of different varietal preferences among women and men farmers, processors, traders and consumers.
- [R]** Ensure basic seed sites are close in proximity to CSEs in order to ensure female CSEs are not disadvantaged, given workloads or restrictions that often limit their abilities to travel outside the homestead for business.

2 Develop and/or pilot gender responsive training, technologies and financial services

Training opportunities

- [B]** Adopt a blended learning approach to accommodate women's practical needs so that women with less formal education can be included in opportunities to build their literacy and business skills.
- [E]** Adapt the goal-setting module of CSE training to promote and accommodate joint goal setting between spouses.
- [T]** Provide specific training for men and female CSEs on gender equality, human rights, and gendered social norms, including those that affect household and farm-related decision-making.

Technologies and financial services

- [B]** Facilitate access to labor- and time-saving farming technologies to help alleviate women's disproportionate involvement in unpaid, domestic work and drudgery.
- [B]** Design and pilot tailored financial packages for women with low interest rates that recognize their practical needs when setting up and maintaining their seed production businesses (e.g., cash to hire extra labor when preparing their fields).

¹⁵ In alignment with the proposed framework, recommendations are broadly classified in the following categories: **R** = Reach; **B** = Benefit; **E** = Empower; **T** = Transform.

3 Embrace the use of gender transformative approaches

- [T] Involve spouses and family members of female CSEs throughout the CSE cycle of engagement to strengthen their awareness and encourage their support, including through the use of the [Gender Action Learning System \(GALS\)](#).¹⁶
 - [T] Implement a male [Gender Equality Champions](#) initiative, including by using [Social and Behavior Change Communications](#) tools and approaches, to showcase the supportive attitudes and behaviors of spouses of female CSEs and encourage peer influence.
-

4 Develop and pilot a women's mentorship program, while strengthening inclusivity within existing CSE networks

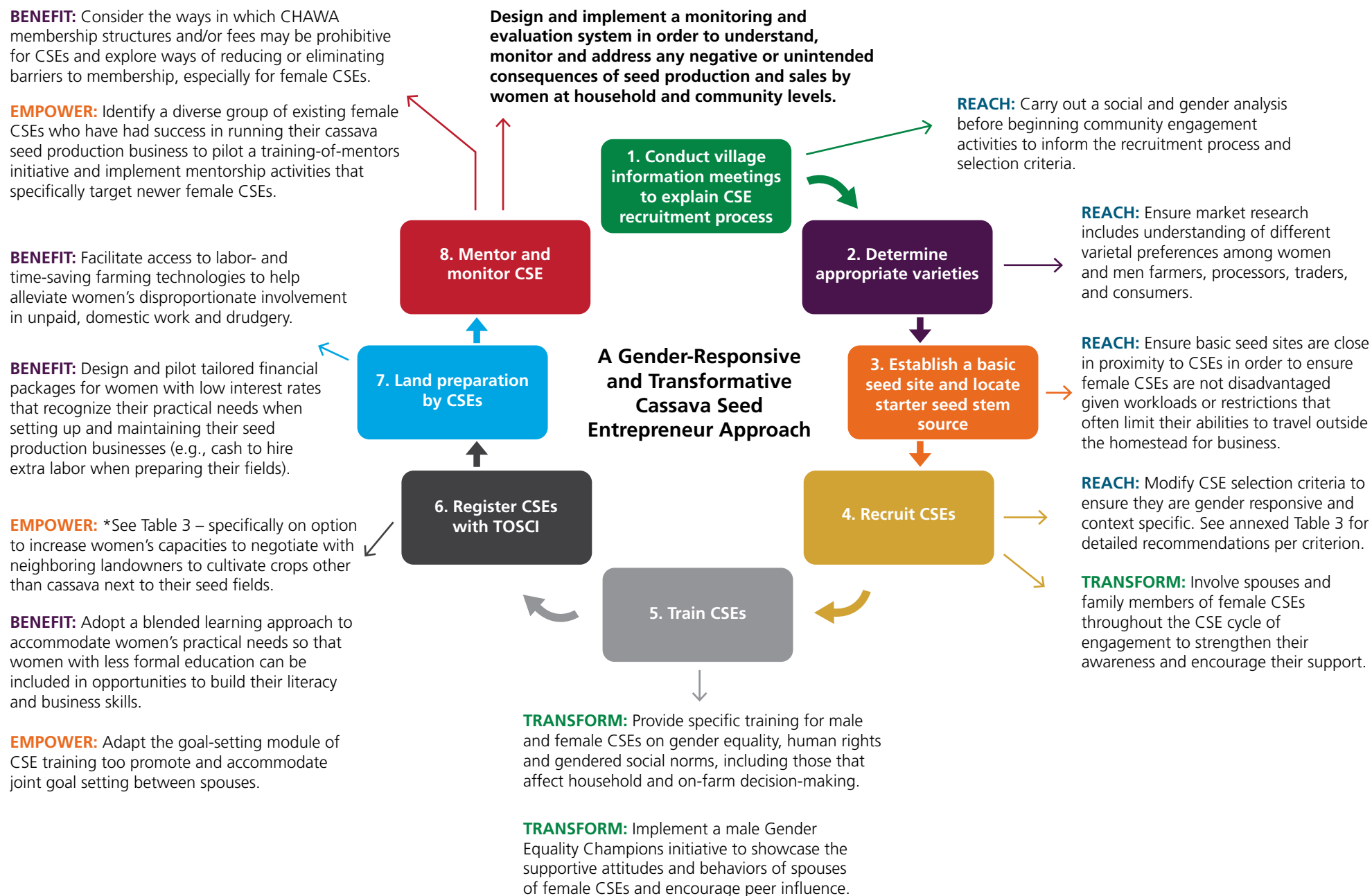
- [E] Identify a diverse group of existing female CSEs who have had success in running their cassava seed production businesses to pilot a training-of-mentors initiative (including refreshers in production techniques and marketing strategies), in view of implementing mentorship activities that target newer female CSEs.
 - [B] Consider the ways in which CHAWA membership structures and/or fees may be prohibitive for CSEs and explore ways of reducing or eliminating barriers to membership, especially for female CSEs.
-

5 Design and implement a monitoring and evaluation system in order to understand, monitor and address any negative or unintended consequences of seed production and sales by women at household and community levels

Specific actions are additionally represented in a modified version of the BEST Cassava project's CSE approach (see Figure 5, as compared with Figure 1). Figure 5 demonstrates where the CSE approach can be modified at each stage to become more gender responsive and transformative. Detailed recommendations for adjusting each of the *selection criteria* used in the BEST Cassava project (as recommended above) can be found in the attached Annex (Table 3).

¹⁶ The Gender Action Learning System (GALS) is a community-led empowerment methodology that promotes women's rights through the use of participatory processes and diagram tools that enable household members to negotiate their needs and interests to develop innovative and equitable solutions in livelihood planning and interventions.

Figure 5. A Gender-Responsive and Transformative Cassava Seed Entrepreneur (CSE) approach to commercializing the cassava seed system in Tanzania



Conclusion

The main objective of the gender study was to identify the key barriers and success factors that women face in becoming CSEs and benefiting from their CSE work. The study revealed structural barriers that can prevent women from meeting eligibility requirements and becoming successful CSEs. When applied without a gendered analysis, selection criteria such as access to land, financial resources and training interest can limit women's abilities to participate and succeed in CSE opportunities. Qualitative findings highlighted the challenges female CSEs face when trying to access the resources necessary for running their businesses. Moreover, gendered social norms, unequal attitudes and perceptions within communities can create additional barriers for female CSEs to engage in and benefit from seed production as a business.

Results also demonstrated how, with a supportive family environment and increased access to capital, land, training, and group membership, opportunities offered through the CSE approach can increase women's income and strengthen their agency. Women cited having increased decision-making powers – an outcome that had not been previously captured by the BEST Cassava project. Together, the results suggest that an approach that considers the technical and social barriers for women is required when designing and implementing integrated seed production models.

The study's recommendations serve as a guide for implementing a gender-responsive and transformative approach that aims to reach, benefit, and empower female CSEs, as well as to transform restrictive norms at each stage of the CSE approach. Through implementation of these recommendations, cassava seed systems can be strengthened to ensure more inclusive and equitable opportunities for both women and men.



Annex

Table 3. Recommendations for gender integration in CSE section criteria

Selection criterion	Recommendation
Availability of land	• Understand customary land tenure and residence norms for married couples (patrilineal vs. matrilineal) to determine how local leaders and men (husbands) who often govern resources in rural areas can be engaged in the CSE process to facilitate equitable access to land for women. • Develop specific financial products for women to enable them to purchase land and payback loans as their seed production businesses generate profits. • Strengthen women's capacities to negotiate with neighboring landowners to cultivate crops other than cassava next to their seed fields. A 'win-win' scenario should be promoted given power dynamics that might benefit female CSEs who come from advantaged backgrounds in their communities. • Work together with community leaders to develop by-laws that protect seed producers and to advocate for increased adherence to by-laws for increased seed availability in their communities.
Financial resources	• Develop and make available financial products with low interest rates for women to start up and grow their seed production businesses, in addition to supporting women's access to local savings and lending groups. These products must consider women's specific needs and circumstances to ensure they do not falter on their payments and fall into debt. • Provide training for women that supports them to develop strong plans to grow their businesses and asset base to create a sustainable overall strategy to securing their livelihoods.

Business acumen and recordkeeping	• Develop and provide adult literacy/numeracy training for women cassava seed producers to help meet their business needs. Women with limited formal education should not be excluded from CSE opportunities. • Incorporate a blended learning approach into business and agronomy skills training for CSEs, considering the potential differences in formal education and literacy/numeracy between and among women and men farmers. • Engage men to support women's ambitions and opportunities as CSEs through the adoption of gender transformative approaches. • Showcase female CSE exemplar cases to help transform negative stereotypes about women's business capacities.
Proximity of land to roads	• Support women and men farmers to consider alternative options for access routes before they begin investing in a cassava seed production business. Farmers who do not have access to lands near well-trafficked roads should not be necessarily excluded from becoming a CSE.
Training interest	• Incorporate gender transformative approaches with a view to transforming gendered norms around domestic and care work and engaging men to share the burden of this work more equitably. • Ensure that trainings take place nearby to women farmers' homes and during times that enable women to attend without putting them at risk of backlash from their husbands or other family members.
Farming acumen	• While farmers' involvement in cassava seed production is an important opportunity to generate income and supply improved seed to nearby farmers, CSEs (and especially female CSEs) should be made aware of the potential risks involved when devoting too many resources (e.g., labor and cash) into one activity, thereby decreasing the diversity of crops produced. It is well known that farm diversification enables farmers to spread their risk across a range of production activities and thus increase their resilience to climate change and other shocks and stresses.