



OPEN ACCESS

EDITED BY

Renee Marie Bullock,
International Livestock Research Institute (ILRI),
Kenya

REVIEWED BY

Justice Gameli Djokoto,
Central University, Ghana
Jonathan Steinke,
Humboldt University of Berlin, Germany
Therese Mwatitha Gondwe,
Alliance Bioversity International and CIAT,
Kenya
Anne Namatsi Lutomia,
Purdue University, United States

*CORRESPONDENCE

Manuel A. Hernandez
✉ m.a.hernandez@cgiar.org

RECEIVED 13 March 2023

ACCEPTED 07 June 2023

PUBLISHED 27 June 2023

CITATION

Hernandez MA, Alarcon C, Berrospi ML,
Lopera D, Quintero D, Reyes B and
Olivet F (2023) Cultural and economic barriers
and opportunities for the participation of
women in agricultural production systems: a
case study in Guatemala.
Front. Sustain. Food Syst. 7:1185756.
doi: 10.3389/fsufs.2023.1185756

COPYRIGHT

© 2023 Hernandez, Alarcon, Berrospi, Lopera,
Quintero, Reyes and Olivet. This is an open-
access article distributed under the terms of
the [Creative Commons Attribution License
\(CC BY\)](https://creativecommons.org/licenses/by/4.0/). The use, distribution or reproduction
in other forums is permitted, provided the
original author(s) and the copyright owner(s)
are credited and that the original publication
in this journal is cited, in accordance with
accepted academic practice. No use,
distribution or reproduction is permitted which
does not comply with these terms.

Cultural and economic barriers and opportunities for the participation of women in agricultural production systems: a case study in Guatemala

Manuel A. Hernandez^{1*}, Constanza Alarcon¹,
Maria Lucia Berrospi¹, Diana Lopera², Diana Quintero²,
Byron Reyes² and Francisco Olivet³

¹International Food Policy Research Institute, Washington, DC, United States, ²International Center for Tropical Agriculture, Cali, Colombia, ³Universidad Mariano Galvez, Guatemala City, Guatemala

As in other Latin American countries, agricultural activities in Guatemala contribute with 32% of the total employment (65% in rural areas), but only one in every ten individuals employed in these activities are women. This study examines the cultural and economic barriers and opportunities for the participation of women in agricultural (crop and livestock) production systems. We rely on a qualitative approach involving focus group discussions with 15–20 women in each of the eight communities visited in the departments of Chiquimula (Dry Corridor) and Huehuetenango (Western Highlands) in October 2022. The study provides several interesting findings, which generally hold across locations. First, women do not seem to have a strong preference for crop production activities, except harvesting, and only get involved in specifically assigned tasks. This lack of interest and participation in crop-related activities, which can be related to low empowerment levels and traditional stereotypes in the community about gender roles, persist even in locations with a higher emigration of men, where women could be expected to take over traditionally male crop-related tasks. Second, participants carry out a variety of other unpaid activities, including raising small-scale livestock and maintaining home gardens, which they do not recognize as formal, income-generating occupations despite their more active role. Third, women consider the commercialization of their products a persistent challenge as they do not have access to markets beyond their community, which additionally results in a deterrent to applying for credits due to a generalized fear of defaulting. Despite their day-to-day economic hardship, participants' main aspirations point to generating more income in non-crop-related activities, mainly livestock farming and raising, or, alternatively, emigrating to provide a better future for their children. These findings remark the importance of offering extensive support to women to not only start new activities, as it has been the case of several public and private initiatives in the area, but help them through continuous extension services on production, storage, and commercialization; management and accounting; and financial literacy, as well as on building agency capacity through existing women groups and organizations and enabling the environment for improved access to markets and credit.

KEYWORDS

barriers, opportunities, agriculture, livestock activities, women, rural Guatemala

Introduction

Women make up around 40 percent of the agricultural labor force at the global level, but figures for Latin America and specifically Central America indicate that women's participation in agriculture is significantly lower, only representing 20% (FAO, 2011). In the case of Guatemala, crop and livestock activities contribute to 9.4% of Guatemala's GDP (World Bank national accounts data, OECD National Accounts data files, 2021) and constitute 32% of the total employment in the country (65% in rural areas), and yet only one in every 10 individuals employed in these activities are women (INE, 2019). In contrast, roughly eight out of 10 backyard livestock producers in Guatemala are females (INE, 2003).¹ The contribution of women to their household income is similarly one of the lowest (26%) in the region (Ballara et al., 2010).

The unequal participation of women in agricultural production results in them having less political and institutional support, access to resources, and economic opportunities (Fletschner and Kenney, 2010; Deere et al., 2011; Espinal et al., 2015; Ibáñez and Guerrero, 2022). This could, in turn, have implications on women's empowerment and agency that could limit their participation in certain activities. It can also affect agricultural productivity, poverty, hunger, and economic growth. Women's economic empowerment through credit or access to assets (e.g., land, livestock) positively impacts nutrition and food security (Deutsh et al., 2001; Quisumbing and Meinzen-Dick, 2001; Hendriks, 2019). FAO (2011) further sustains that an equal access to agricultural resources by women could increase farms yield significantly and raise total agricultural output in developing countries.

Several authors also emphasize the importance of livestock as an income source for women. While women in rural households primarily contribute to family care and agriculture as a support role (World Bank Group, 2015; International Labour Organization, 2019), many women own animals and are responsible for managing and caring for them. This is typically small livestock used primarily for household consumption (Herrero et al., 2013; Grassi et al., 2015), but their participation in this activity represents an opportunity to gain empowerment, since they can earn an income from the sub-products (e.g., eggs) without being burdened with additional housework tasks (Rota and Urbani, 2021).

However, when analyzing women's empowerment and agency, it is important to consider additional dimensions. There is a tendency for efforts to focus solely on promoting the participation of women in the labor market and economic activities without taking into consideration cultural and contextual factors (e.g., aspirations, illiteracy) that may contribute to low levels of empowerment (Anderson et al., 2021). Duflo (2012) stresses that economic development alone is not sufficient to deliver significant advancements in aspects such as agency and gender. All in all, the significant gender differences in workforce participation reflect the necessity to better understand the barriers, challenges, and opportunities for women, which may be context specific, to move out of (unpaid) small-scale production for self-consumption and become more involved in (income-generating) agriculture production systems.

Research on gender issues within the context of agricultural production in Latin America is still growing, particularly on livestock activities, and mainly focuses on economic obstacles, such as the lack of access to resources and information. Valdivia (2001) reviews the research on the Small Ruminant Collaborative Research Support Program in different countries, including Bolivia and Peru, and finds that access to livestock differs according to gender and that small ruminants are primarily managed by women. Furthermore, female livestock ownership contributes to household welfare, gender equality, and the empowerment of women. This aligns with Rota and Urbani (2021) who relies on qualitative case studies from Venezuela and other countries and find that women are concentrated in small livestock ownership. Triana and Burkart (2019) review the literature on bovine livestock in Latin America and discuss some cultural barriers faced by women. Besides lack of access to the necessary assets for livestock production, the authors identify cultural resistance to female ownership as well as the perception of the cattle industry as being a male-dominated industry. In Africa and Asia, Herrero et al. (2013) demonstrate that some of the barriers to women owning large livestock include limited access to technology and information, lack of training, long workdays, and literacy problems.

In this context, the main objective of this qualitative study is to broadly examine why women are not more involved in crop production and livestock activities, despite wanting to generate alternative income streams. We pay special attention to cultural and economic barriers that could be preventing women from participating more predominantly in crop and livestock production systems and identify opportunities to promote and increase their participation. We focus both on the Dry Corridor (department of Chiquimula) and Western Highlands (department of Huehuetenango) of Guatemala, which are the two most vulnerable regions in the country. In Huehuetenango, only 6% of the people that work in this sector are women whereas in Chiquimula this percentage is 3% (INE, 2018). However, more than half of backyard producers in both regions are women (INE, 2003). We draw comparisons from two regions sharing poor socioeconomic conditions but different climatic and cultural settings. We explore cultural barriers related to women's expected roles in their household and community as well as their aspirations, beliefs, and social norms, whereas we examine economic barriers linked to limited access to markets and commercialization, lack of credit, and recurrent emigration. Using Chiquimula and Huehuetenango as case studies, we assess similarities and differences in the potential barriers faced by women in two different regions of the country and identify opportunities to increase women's participation in agricultural activities as a means for earning a sustainable income.

The analysis relies on focus group discussions with female participants implemented across eight rural communities in the two departments in October 2022. The study results show that women in both regions do not appear to have a strong preference for crop-related activities. Despite living in areas where there is a high emigration of men, participants do not consider themselves capable of carrying out the complete crop cycle (especially planting, sowing, and tilling) and only opt to participate in specific activities assigned to them. This lack of interest and participation in crop production could be related to low empowerment and agency levels and traditional stereotypes in the community about gender roles and labor activities that women are expected to perform in their communities. Women also do not recognize these secondary activities as economic occupations, as they are generally unpaid. Other unpaid activities include raising and maintaining small-scale livestock for

¹ Statistics generally tend to underreport subsistence activities such as domestic work and agricultural backyard production, which are mostly undertaken by women (Beneria and Sen, 1981).

self-consumption. Lack of access to markets outside their community and barriers to commercialization are perceived as important deterrents to acquiring credit or developing businesses by participants. Still, their main desire is to generate more income through non-crop-related activities or to eventually emigrate to provide for their families.

The remainder of the paper is organized as follows. In the next sections, we first describe the background of the areas studied and then outline the study methodology. We then present and extensively discuss the results of the study, including similarities and differences across locations. The final section provides concluding remarks and policy recommendations.

Background

The study focuses on the departments of Chiquimula and Huehuetenango. The two departments, located in the East and West of the country, respectively, concentrate an important number of poor and food insecure populations and were selected to explore potential differences (or similarities) in behaviors, perceptions, and restrictions faced by women toward productive activities in opposite regions of the country, with varying climatic and cultural settings.

Chiquimula is in the Dry Corridor, an area of tropical dry forest or dry area that is highly susceptible to extreme climatic events, such as droughts and heavy rainfall (CGIAR, 2018). Huehuetenango is in the Western Highlands, a region that has been adversely affected by climate change, with more frosts and extreme water shortages (Nerger, 2012). Climate vulnerability is highly relevant since both in Chiquimula and Huehuetenango more than one-half of the rural population works in agriculture activities (INE, 2018).

Crop production in both regions is largely dependent on small farmers who produce maize and beans for their own consumption. In Chiquimula, the livestock industry is predominantly bovine, while in Huehuetenango it is primarily ovine (INE, 2003). Producers generally face numerous challenges because of lack of resources and climate change (Fuentes, 2005; Corado, 2019). Rural women in Huehuetenango are relatively more involved in agricultural activities than in Chiquimula but only represent about 6% of the crop producers (compared to 3% in Chiquimula), while women in both regions represent half of the backyard producers (INE, 2003, 2018). Housework activities are among the main occupations for women in both regions alongside retailing (e.g., selling handcrafts, owning restaurants, and working in food service) and manufacturing (e.g., fabrication of textile and clothing products, preparation of meals).

In terms of socioeconomic conditions, in both departments about seven out of 10 people live below the poverty line and six out of 10 children under five suffer from chronic malnutrition. Both regions are also highly impacted by migration. While Chiquimula has a migration rate of 15 migrants per 10,000 people, Huehuetenango has a migration rate of 55 migrants per 10,000, which is the highest rate in the country (INE, 2015, 2017, 2018). The share of indigenous population, in turn, is very different between the two departments: close to two thirds of the population are indigenous in Huehuetenango versus one fourth in Chiquimula (INE, 2018).

The specific municipalities and communities within the two departments were chosen in collaboration with the Secretariat of Food and Nutritional Security (SESAN) and the Ministry of Agriculture, Livestock, and Food (MAGA), and are part of the areas prioritized by

both institutions within the National Great Crusade for Nutrition Initiative 2020–2024, a national program aimed at improving the nutrition of the most vulnerable Guatemalans.² All of the selected areas are highly vulnerable, with high levels of poverty, migration, and malnutrition, as described in [Supplementary Table 1](#).

As shown in [Figure 1](#), the four communities in Chiquimula are distributed between the municipalities of San Jacinto (Tizubín and Las Lomas) and San Juan Ermita (Minas Abajo and Tasharjá). About half of the population in both municipalities are involved in agricultural activities as their main economic activity (INE, 2003). However, only 1% of the population in San Jacinto dedicated to this sector are women, while this percentage increases to 3% in San Juan Ermita (INE, 2018). Women are mainly involved in retailing, manufacturing, education, and housework activities (INE, 2018). In the case of Huehuetenango, three communities are in the municipality of Chiantla (El Manzanillo, Siete Pinos, and La Zeta) whereas one is in San Juan Ixcay (Yulchecán). More than one-half of the population in these areas is employed in agriculture, with women making up only 4 and 2% of this sector in San Juan Ixcay and Chiantla, respectively (INE, 2003). Women in these municipalities are mostly dedicated to housework and retailing (INE, 2018). [Figure 2](#) maps the eight communities included in the study across the two departments.

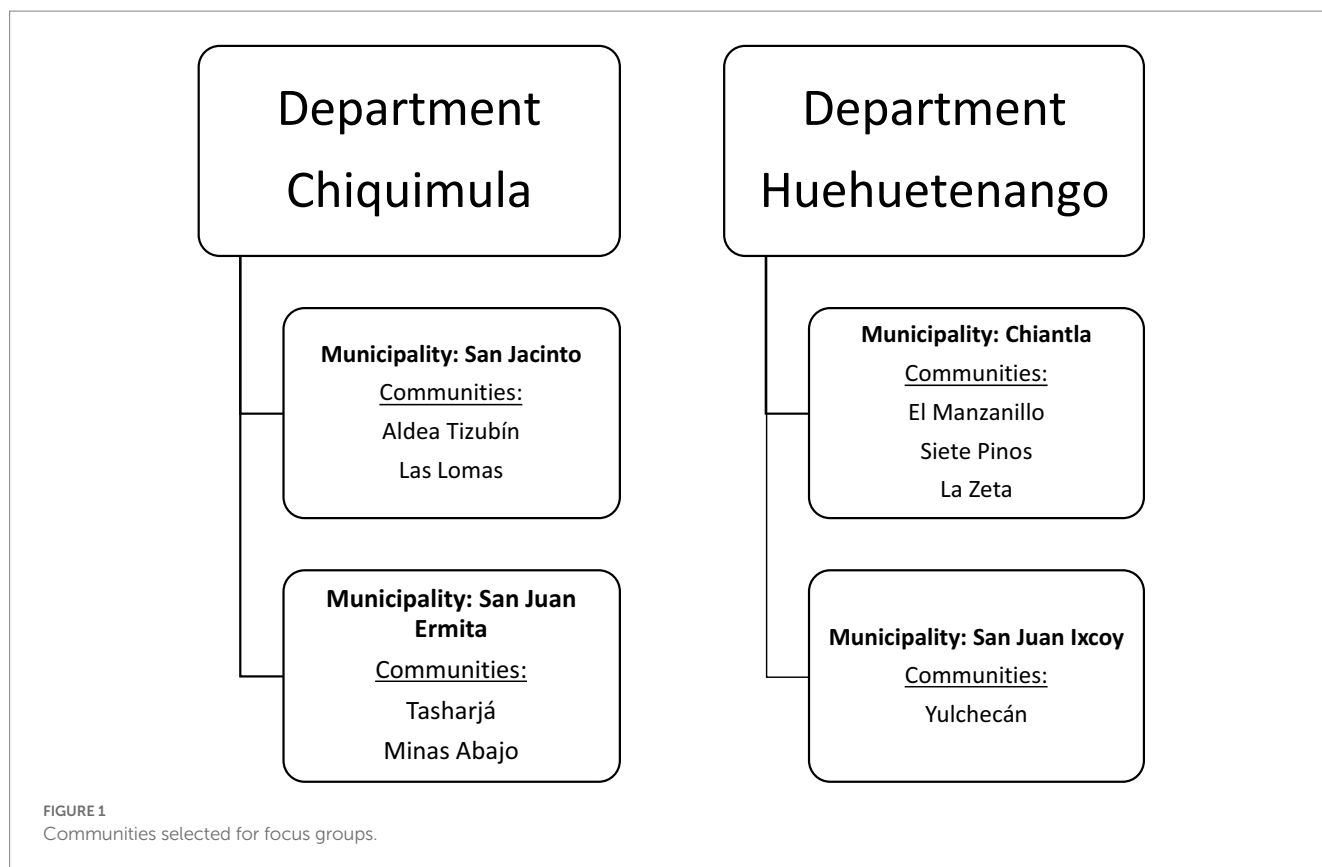
Methodology

The methodology of the study consists of the implementation of eight focus groups (one per community) with an average participation of 16 women per focus group, totaling 131 participants overall. Four focus groups were held in Chiquimula and four in Huehuetenango. SESAN pinpointed municipalities, where they, alongside international donors, have carried out interventions and MAGA selected communities that participate in their workshops and events. MAGA then held an open call to all participants from their past interventions and those available to participate were part of the focus groups. The eight communities selected are mainly of subsistence agriculture and are distributed evenly across both departments. The group of women who participated in the focus groups are generally representative of their community population as women in the communities visited typically have the same education level and perform similar roles and occupations based on their age.

An interview guide was developed for the implementation of the focus groups.³ The interview guide has five key sections with guiding questions meant to elicit deeper conversations on specific topics, including the community setting and local labor dynamics, household decision-making, migration patterns and use of remittances, aspirations and future objectives, among other subjects. The interview guide similarly includes an ethics protocol in which participants were reminded that they can choose to participate or exit the focus group at any point. A summary of the main topics discussed is depicted in [Supplementary Figure 1](#).

² For more information on the Great Crusade for Nutrition Initiative see: <https://portal.siisan.gob.gt/documentos/gran-cruzada-nacional-por-la-nutricion-2020-2024/> (accessed May 2023).

³ The full interview guide used in the focus groups is included in the [Supplementary material](#).



The information from the focus groups was captured deploying an extensive methodology that included: two moderators and two note takers per focus group session plus audio recording each session. A theme-based double entry matrix was further elaborated to systemize participants' answers and better organize the findings for subsequent analysis. This matrix systematizes the modules of the focus group interview guide by relevant themes discussed, highlighting three important topics that address our main research question: attitudes, beliefs, and participation in agricultural activities; roles and aspirations; and economic and financial constraints toward commercializing agricultural products.

The focus group sessions were supplemented with post focus group debriefs among researchers per community visited and covering all relevant topics, followed by general discussions analyzing similarities and differences per department once all focus groups for that department were completed. These sessions helped to review all written accounts taken by the notetakers, which were subsequently complemented with the review of the audio recordings that also permitted to capture the most important quotes and testimonies of each focus group.

The descriptive statistics of the studied sample by department are reported in [Table 1](#). The women that participated in the focus groups are roughly equally distributed between Huehuetenango and Chiquimula. Most participants were under 45 years of age, including about three out of 10 being under 30 years of age in Chiquimula and four out of 10 in Huehuetenango. The main occupation self-reported by participants is homemaker. See [Supplementary Tables 2, 3](#) for the composition of the focus groups by municipality and community, respectively.

Results

This section presents the results of the study. First, we present results for Chiquimula, focusing on rural women's attitudes and beliefs toward agricultural activities, their household roles and aspirations, and economic and financial constraints toward commercializing agricultural products. Second, we present results for Huehuetenango on the same topics of interest. These topics inform the cultural and economic barriers to women's participation in both crop and livestock activities.

Chiquimula

Attitudes, beliefs, and participation in agricultural activities

While all communities visited in San Jacinto and San Juan Ermita are traditionally rural, two communities in San Jacinto, Las Lomas and Tizubín, are relatively more developed, particularly the former, in terms of road connectivity, given their closer proximity to the capital of the department.⁴ However, all focus group participants across the four communities initially identify their primary occupation as home makers and claim being in charge of their household. Only four

⁴ Las Lomas is about 45min' drive from the capital of the department and Tizubín is around one hour away, while the other two communities located in San Juan Ermita are more than one hour away.

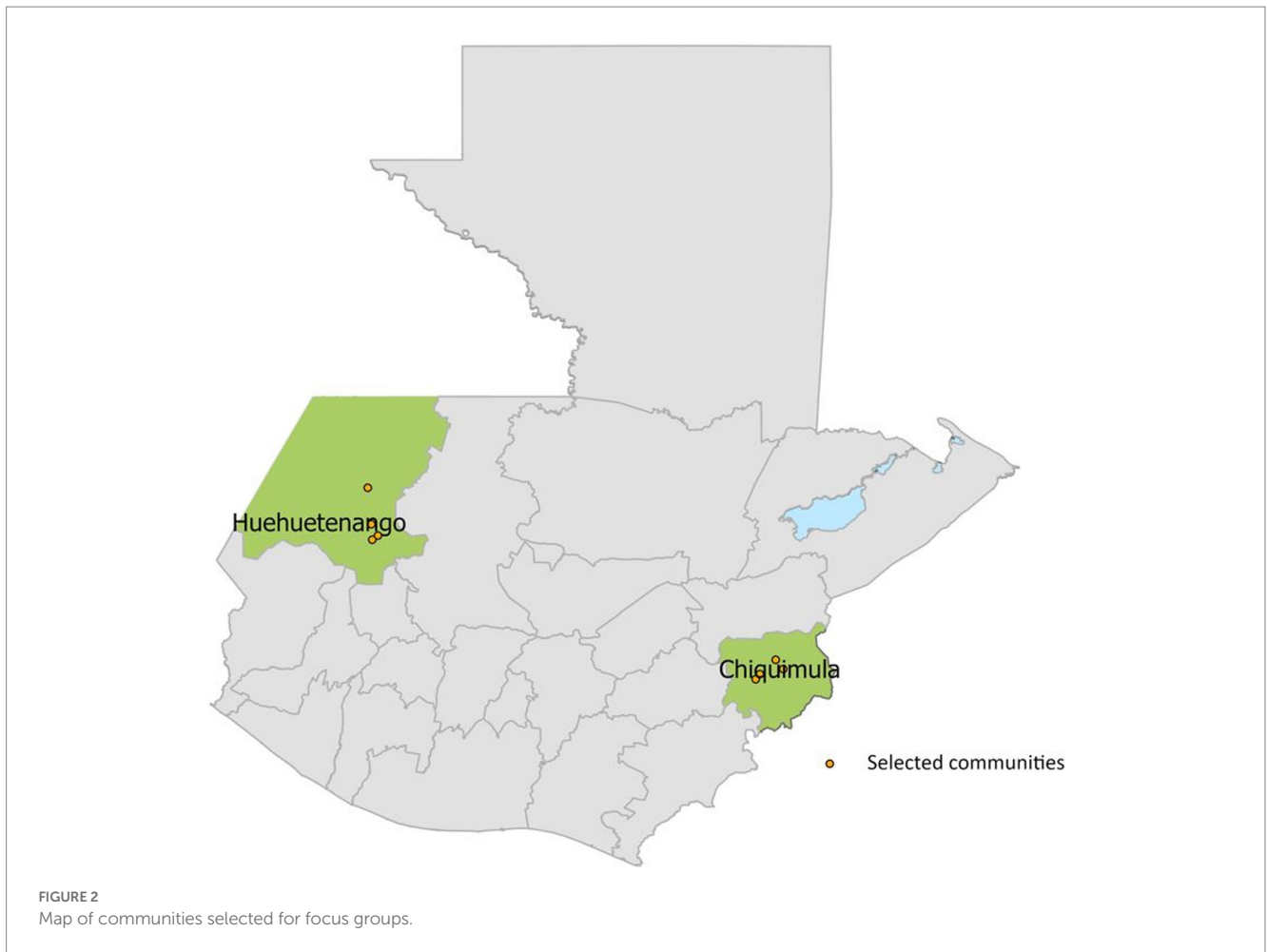


TABLE 1 Focus group descriptive statistics by department.

Department	N of participants	Age		Main Occupation	
		Range	%	Occupation	%
Chiquimula	64	<30	25	Homemaker	100
		30–45	40.63	Student	0
		>45	34.38	Producer	0
			100	Total	100
Huehuetenango	67	<30	37.88	Homemaker	97.01
		30–45	34.85	Student	1.49
		>45	27.27	Producer	1.49
Total	131		100		100

Producer refers to agricultural producer or individual that works in agricultural-related activities.

participants, out of 64, identify a secondary occupation that include an artisan, community representative, and two agricultural producers. While women overwhelmingly recognize their household as their primary occupation, as the focus group progressed other daily unpaid tasks were recognized as occupations. For example, most of the participants report having free-range hens that they breed, use for

self-consumption, and commercialize at a small-scale through the sale of eggs. Participants also allude to occasionally helping in specific crop-related tasks such as maize husking and picking beans; on this regard, a participant in Minas Abajo (San Juan Ermita) noted, “*women have to lend a helping hand when there is not enough money to pay for workers, we usually deal with things that are not heavy, like picking beans.*”

Participants note that men in the community often work in crop production as a primary occupation and other temporarily available jobs such as electrician and bricklayer. They indicate that the main crops grown are beans and maize. While women help in specific tasks such as husking maize and picking beans, women do not report actively participating in sowing, planting, and growing activities. Moreover, participants note that there are culturally held beliefs surrounding women's participation in these activities, such as that sowing seeds is a "male dominated" activity and therefore they are not highly interested in participating. In Las Lomas (San Jacinto) a participant stated, "our husbands work in agriculture, we as women help when there aren't workers available, but I rather stay at home as others typically judge when they see a woman doing a man's job." Across all four communities (Tizubín, Las Lomas, Minas Abajo, and Tasharjá), participants share the opinion that, only when labor is overtly expensive, they help their partners with limited crop-related interventions such as: extracting maize cobs, fertilizing and collecting crops. It is important to note that participants' partners generally rent the land where their crops grow so they can stop renting if it gets unprofitable to keep operating the land.

In terms of emigration, which is a recurrent phenomenon across several rural areas in the country, participants share their perceptions about the impacts of migration in their communities and households. While participants indicate that they had not experienced high volumes of migration in their nuclear families, they have noticed a significant increase of neighbors migrating over the past 5 years.⁵ When asked if there are changes to the role of women who have husbands who have emigrated, participants note that women adopt the roles traditionally assigned to both mothers and fathers, meaning that women must take care of the household as well as become the main income provider for the family. A participant in Tizubín (San Jacinto) mentioned, "women stay in charge of their family, sometimes they administer the land and crop-related activities, but if there aren't children to help in completing the crop-related tasks then they stop leasing the land and live off of remittances." Women emphasize that they prefer not to take on the role of crop producer but would rather end the lease on the land their husbands have. Participants also highlight that despite both men and women emigrating, men always migrate first, and women follow when their economies allow for it. However, women in all four communities mention that the increased cost of emigration (i.e., paying a "coyote" about 100,000 Quetzales or over 12,650 US dollars to cross the US border) is inaccessible for them. Ultimately, women perceive that men have more employment opportunities abroad due to their gender and the physical abilities associated with being male, another culturally-held belief.

Roles and aspirations

Participants across communities have very defined primary household roles as caregivers and their aspirations are focused on their children. Participants overwhelmingly have a negative perspective about the future, specifically citing concerns regarding climate change and the external shocks that may affect their partners' crop-related activities considering the recurring natural disasters. A participant in

Minas Bajo stated, "this community is going to go downhill, our crops depend on the climate, and there's always a possibility that climate change will only get worse."

Another important finding regarding women's aspirations is directly linked to their (negative) gendered self-perception. For example, participants express that they do not have the same physical or mental capabilities as men, who according to them, have more challenging jobs or can develop better entrepreneurship ideas. In Tizubín a participant commented, "we, as women, do not really know how to do many activities outside our homes, men are the ones who know more."

When asked about their future regarding becoming involved in income generating activities, participants struggle to visualize and convey their goals or aspirations due to their short-term vision. Still, participants in all four communities state that they would be interested in laying hen and pig farming programs. Only participants in Las Lomas, a more peri-urban community, had previous experience working with local and international organizations on poultry farming and drinkable water projects. These participants expressed interest in participating in more projects raising and selling small-scale livestock but highlight the importance of accessing markets where to sell any potential produce. Specifically, women mention that the poultry farming initiative promoted by the government through the Ministry of Agriculture, Livestock, and Food (MAGA) has been successful at the community level, but ultimately failed at creating them revenue as they do not have any markets outside their own community to sell their eggs and other byproducts. Overall, participants have a looming pessimism about both their household and communities' future, citing challenges such as income generation, continuous increase of food prices, and volatile weather conditions as significant threats.

Economic and financial constraints toward commercializing agricultural products

Across all four communities, participants remark their financial dependence as their most significant constraint. Most participants, except for two crop producers and one artisan, depend financially on their partners' crop production and their limited income generated by this activity is described as a barrier to start or expand any small-scale livestock activities (or emigrate). Participants universally agree on the decision-making dynamics within their households.⁶ Women make decisions over family expenses such as food, cleaning products, and children's schooling. One participant in Minas Abajo said, "while our husband is the provider, women know the necessities of the household; therefore, we decide how the money should be used toward household expenditures." In terms of home equipment, participants express that while they have discussions together, men have the ultimate say on the items purchased. Finally, when it came to investments for production activities, such as agricultural machinery and equipment, technology, or more livestock, participants agree that

⁵ It is worth remarking that participants could refer to the neighbors to avoid referring to themselves as emigration can be a sensitive topic.

⁶ It is important to note that intra-household decisions were discussed without distinguishing between households with or without migrants, but we believe financial decisions are similar regardless of whether the partner has emigrated or not.

the decisions are generally made together. However, if the investment is, for example, on small-scale livestock activities (i.e., a designated “female led” activity), women can eventually have the final decision, while if it concerns an investment for crop-related activities, men will have the final decision. Yet, this type of investments only occurs on rare occasions, given their limited household income.

When asked about the possible use of remittances and credits to overcome economic barriers to invest, for example, in their already existing backyard production activities, participants mention that remittances (when available) are only used to cover household expenses while credits, whether individual or as a group, are negatively perceived. Group lending (where a loan is provided to a group of people and all group members are held liable for repayment) has particularly negative connotations for participants, and they refer to negative experiences with this form of credit. In Tizubín a participant mentioned that a project encouraged women to participate in a group lending pilot project, but the project shut down prematurely due to a member not being able to pay their part of the credit. In Tasharjá (San Juan Ermita), participants also mention having knowledge of group credits and a participant shared her experience where there had been payment defaults that resulted in a higher cost burden for other project members. Both group lending experiences have been carried out with Banrural, the second largest operating bank in Guatemala, and the credits have been used for the purchase of small-scale livestock and crop products. In terms of individual credits, participants across all communities cite high interest rates as the main deterrent for pursuing them. There is an overwhelming collective risk aversion to engaging in individual credits as participants cite fear of missing payments due to the uncertainty and variability of their revenues from crop-related activities. In Las Lomas, a participant said, “*we do not apply for a loan because when you invest in crops, there is always the risk that these can be damaged or ruined due to the uncertainty of the weather, which would make the repayment of the loan impossible.*” Another important deterrent cited for applying to individual loans is the requirement of a guarantor by credit agencies, which participants mention creates an additional layer of difficulty in accessing a loan. In addition, participants cite the lack of access to markets as a major economic barrier to seeking any form of credits for investment in secondary occupations such as buying more backyard animals. In Las Lomas a participant mentioned, “*there is no reason to get a credit for a business because we have nowhere to sell our goods; there are few, to none markets within the community and those that are outside are not accessible to us.*” All these constraints influence women’s attitudes toward investing in income-generating activities (including livestock production) that could allow them to access markets to sell their outputs.

Huehuetenango

Attitudes, beliefs, and participation in agricultural activities

In Huehuetenango, except for La Zeta (Chiantla) that is a walking distance from a main highway (RN-9) and less than 30 min driving distance from the capital of department, the other three communities

visited are much more isolated.⁷ More than 98% of the participants identify their primary occupation as home makers. Only one participant identified her primary occupation as student, while a second participant identified her main occupation as crop producer. Both participants that did not self-identify as homemakers were from La Zeta. In terms of secondary occupations, five out of 67 women identify themselves as crop producers. As in Chiquimula, women recognize additional tasks that they complete throughout the day of significant importance, which are not necessarily paid. Participants highlight three additional activities: gathering and carrying water from the community watering hole to their households up to three times a day; small-scale livestock farming for household consumption and small-scale commercialization; and managing small home gardens for household consumption. On average, participants indicate that they could spend nine to 12 h per day carrying water to their households as their communities do not have access to water. Except for La Zeta, who have accessible drinking water, the rest of the communities must either visit a river (in the case of Yulchecán in San Juan Ixcoy) or travel to an available water hole (Siete Pinos and El Manzanillo in Chiantla). Farming and raising small-scale backyard animals are important activities for participants across all four communities as most have free range hens, pigs, sheep, goats, cattle, rabbits, and wild turkeys. Women further point out that small-scale backyard production is a woman’s role, while crop-related activities are a man’s role; yet, when the cost of crop labor is too high, they can help their husbands by performing specific activities such as fertilizing the land, husking maize, and cleaning crops. A participant in El Manzanillo said, “*women help in specific agricultural activities that are considered for women only when there is not enough money to pay for more male workers.*” In terms of home garden activities, women grow small herbs that can be used in their daily cooking such as coriander leaves, as well as small vegetables such as cabbages and eggplant.

Participants also mention that the main purpose of raising backyard livestock is for self-consumption that can help cope with their seasonal and volatile crop production. Crop production is seasonal in Huehuetenango as winter is the only time when producers can cultivate their crops; during summer, producers will work and prepare the land, temporally migrate to other departments in search of other crop-related work, or find other occupations such as bricklayer, chauffeur, or bike-driver. The winter period is characterized as a rainy season that lasts from May through October, while summer is a drier period that lasts from November until April. Participants in Huehuetenango heavily rely on their small-scale livestock to keep their families fed all year round. While small-scale livestock is mainly used for self-consumption, participants indicate that they can still commercialize their excess production within their own communities or in neighboring community markets, selling eggs, milk, and cheese, as opposed to Chiquimula where commercialization outside the community is generally infrequent.

Regarding emigration, participants mention that the temporality and uncertainty of the work available in the

⁷ For reference, the other two communities in Chiantla, El Manzanillo and Siete Pinos, were both over one hour away driving from the department capital. The community visited in San Juan Ixcoy, Yulchecán, was about 2h and 20min away.

communities makes migration an attractive option. However, similarly to participants in Chiquimula, they note that the cost to emigrate to the United States is far too high. Besides the high financial costs, participants allude to the extreme hardship and physical and psychological consequences mothers and children have to suffer in the passage toward crossing the border.⁸ *“People risk their lives to migrate, they suffer tremendously during the passage to the border, there is much sadness along the way, but people take on the risk because of necessity, because there aren’t any other options to survive,”* a participant from El Manzanillo commented. When asked about the role of women who have husbands or close relatives who have emigrated, participants comment that women receive remittances and spend them according to the will of the sender (whether it is their husband or a third-party), supervise crop-related work, and adopt the roles of both mother (household caretaker) and father (income generator). Women, however, did not mention taking on the role of crop producers themselves. In both El Manzanillo and Yulchecán participants said that if the man of the household left, women will either end the lease on the land, or become supervisors of the workers who are left working the land but will not engage themselves in temporal crop-related work. As in Chiquimula, participants in Huehuetenango do not show a preference for carrying out traditional crop-related activities outside of those labeled as “women’s work,” but rather continue their household duties such as raising small-scale livestock, maintaining home gardens, and managing their household. Overall participants across the four communities agree that emigration has been increasing, and that while men are more likely to migrate, women are starting to follow as well.

Roles and aspirations

As noted above, participants in Huehuetenango have unpaid roles that go beyond caregiving for their children and spouses (e.g., raising backyard livestock, gathering and supplying water to their households, and maintaining home gardens). Despite not being much involved in crop-related activities, participants in all four communities cite climate change as a significant concern. In Siete Pinos a participant stated that, *“every year the climate is worse, there are increasing storms, rain, and wind, which threatens food availability.”* Food shortages are a generalized concern as heavy rains and storms threaten the small window for crop production during wintertime, and, in the summer, food must be bought at local stores or markets. Increasing food prices is another major concern as their current income is not sufficient to cover all their basic needs. Participants were more vocal around their aspirations to generate their own income, primarily citing increasing and diversifying their livestock as well as getting help to commercialize their products and reach larger markets as future aspirations.

Women were also outspoken about finding a solution to their water shortage problems. A participant in Siete Pinos stated that they want a water project proposed by the government or an international agency since, *“we spend the entire day carrying water, if we had water*

tanks, we would not have to spend all of our hours gathering water, but we could do other activities.” In El Manzanillo a participant stated that, *“if we did not have to worry about water, we could work on raising more sheep since they easily produce offspring, and we could generate our own income.”* When further discussing their aspirations surrounding income generating activities, participants mention examples on how to maximize the use of their backyard livestock production, how to keep their animals healthy, and how to create entrepreneurship activities to commercialize their existing small-scale livestock byproducts. However, participants’ aspirations are tied to activities that they are more familiar with, such as raising small-scale livestock. It is a challenge for them to aspire to anything outside of their lived experiences. In line with what was observed in Chiquimula, women have similarly difficulties envisioning the future of their community and households in 5 years as they live their lives “day to day” (i.e., they exhibit a short-term vision). While participants’ main concerns for the future are climate change, water and food shortages, and increasing food prices, they are also worried that if they invest in expanding their backyard production, they might still not be able to commercialize all their produce and recover their investment.

Economic and financial constraints toward commercializing agricultural products

Participants across all four communities cite financial barriers as their most evident limitation regarding expanding their livestock activities and engaging in more formal commercialization. Another main barrier cited is women’s role in supplying water to their household, which takes several hours of their day. An additional important barrier mentioned was the irregularity of their husband’s work cycle. Given that most men are temporal crop producers, there are periods in which income is significantly reduced, especially during summertime (dry season) when they must travel to other areas for job opportunities. Women prefer to prioritize spending on maintaining their home gardens and ensuring the survival of their small-scale livestock.

Financial decisions regarding the household, home equipment, and investments in production activities is different in Huehuetenango compared to Chiquimula. Whereas women in Chiquimula are the decision makers on day-to-day household expenses, participants across the four communities in Huehuetenango agree that decisions regarding household expenses are made together with their partners. Women report making lists of what is needed for the household and husbands make the purchases depending on whether they have sufficient funds. Regarding home equipment, participants agree that decisions are made in conjunction, except for El Manzanillo were women claim that men make the decision on their own. In terms of crop production activities, participants in La Zeta allude, for example, that men make the decisions about the purchase of crop inputs; *“when spending relates to crops, men decide since they are the ones working the land, they know what needs to be spent in that regard, so they decide by themselves,”* stated a participant. Regarding other investments, participants agree that if there is money left over from household and capital good expenditures, decisions are made in conjunction. However, women were emphatic in expressing that if the funds come from backyard production revenue, they are the final decision makers. A participant in Yulchecán noted, *“if the income comes from our animals, then we, the women, decide, because we are the ones who know about raising activities.”*

⁸ According to the Missing Migrants Project of the International Organization for Migration (IOM), around 5,000 people have died or disappeared en route to the United States since 2014; and these are only confirmed cases (Black and Sigman, 2022).

When asked about the use of remittances and credit access to overcome financial barriers, participants mention that when the household has both the homemaker and the husband, remittances are used according to the will of the third-party sender (e.g., sibling, parent, cousin). In El Manzanillo a participant stated, “*whoever sends the money decides how it’s going to be used, sometimes the money is used for the children or sometimes for household expenses, it depends.*” In La Zeta participants mention that remittances are often invested in construction or home improvements, as renovating their homes is a sign of status in most communities. Participants in El Manzanillo and La Zeta also state that they are aware of group loans but have negative perceptions toward them, whereas in Siete Pinos and Yulchecán participants have not heard about this type of credits. The negative perception is based on bad experiences that neighbors in El Manzanillo and La Zeta have faced but can also be attributed to the overall negative perception toward credits in general. When asked about individual loans, participants in all communities except La Zeta comment that they are fearful of the high interest rates. In Siete Pinos a participant shared her experience saying, “*I asked for a credit from a local financial institution, but I did not have a good experience. I took out the credit to invest in sheep, but because of the hurricane the sheep died, and we could not repay the credit in time, we suffered from the high interest rates.*” Participants in La Zeta indicate that they are interested in applying for a credit but, “*interest rates are too high, and no one is helping with any workshops or courses on how to manage credits.*” While participants have negative perceptions of both individual and group loans due to their risk adverseness, they still aspire to increase their investment in livestock production and expand their product commercialization. Overall, [Table 2](#) below summarizes the main findings by department and topic.

Discussion

In this section, we discuss the similarities and differences in cultural and economic barriers faced by women to participate in crop production and livestock activities in Chiquimula and Huehuetenango as well as examine opportunities to increase women’s participation in livestock production and commercialization activities where they show a more active role (compared to crop-related activities). We discuss cultural barriers in the context of participants’ attitudes and beliefs toward agricultural activities and their household roles and aspirations. We then present economic barriers in the context of participants’ economic constraints and attitudes toward commercializing crop, livestock, and backyard production goods. Finally, we discuss opportunities for promoting women’s participation in agricultural activities, especially livestock production.

Cultural barriers

Participants in Chiquimula and Huehuetenango suffer from lack of social and economic recognition for the tasks they perform in crop and livestock activities. This is consistent with [Faria \(2009\)](#), who finds that the daily work of women in rural areas is underestimated by

society as many of their activities do not fit into the categories formally accepted and recognized by community members around the concept of work. Thus, women’s work can be considered as a set of activities invisible to society, which go beyond the practices strictly linked to domestic work. The finding also aligns with [Grassi et al. \(2015\)](#), who highlight that women provide much of the labor for livestock tasks and that their role is undervalued by policymakers and underrepresented in statistics ([Beneria and Sen, 1981](#); [Gumucio et al., 2015](#) point this out as well). These authors mention that women take care of their household’s animals, which is time-consuming and hindered by lack of water availability, veterinary services, and knowledge of livestock management practices; all of which restricts women’s wellbeing and their engagement in remunerative activities. Finally, [Howland et al. \(2021\)](#) state that women are not amply recognized in the agricultural sector and their role is usually stigmatized and concentrated in cultivating small crops for home consumption and supporting their husbands.

Participants in both Chiquimula and Huehuetenango further consider crop-related activities as primarily male dominated tasks. This is in line with [Rietveld et al. \(2020\)](#), who find that women see agriculture (in particular, commercial agriculture) as a male occupation. Further, this perception is associated to the type of activities that women perform in the crop cycle, some of which are perceived as lighter activities that perpetuate gender segregation in agriculture ([Paulilo and Silva, 2007](#); [International Labour Organization, 2019](#)). Small livestock farming and raising activities are identified in both departments as a woman’s responsibility since they are viewed as part of domestic activities ([The World Bank, FAO, and IFAD, 2009](#); [Herrero et al., 2013](#); [Gumucio et al., 2015](#)). Based on the findings above, it seems that national statistics regarding the contribution of women to agriculture are understated. They fail to consider the domestic activities that women perform, especially in the case of small-scale livestock production.

There are also evident differences in women’s participation in livestock and crop-related activities between Chiquimula and Huehuetenango. Participants in Chiquimula work exclusively with free range hens (as past government interventions have provided them with hens) and participants in Huehuetenango have a higher diversity of small-scale animals. While participants in Chiquimula prioritize self-consumption, in Huehuetenango they are more market oriented and attempt (to the extent possible) to commercialize part of their livestock products. This is because of two main reasons: first, participants in Chiquimula state that with previous projects, they had not been able to find markets outside their own community; second, people in Huehuetenango are more actively seeking additional income opportunities as the crop cycle is narrower. While participants from both departments express that crop-related activities are a male-led job associated with traditional masculine traits, women in Huehuetenango still express some interest (as opposed to Chiquimula) to receive trainings and workshops on crop-related activities. This is consistent with other studies that emphasize the increasing participation of rural women in crop-related activities, which has been referred to as “the feminization of agriculture” ([Deere, 2005](#); [Lastarria-Cornhiel, 2008](#); [World Bank Group, 2015](#); [Baada and Najjar, 2020](#)).

Women in both departments show significant difficulty to project into the future, participants envision themselves as part of a household, and have difficulties verbalizing their personal

TABLE 2 Summary of key findings by department.

Department	Main Findings		
	Attitudes, beliefs, and participation in agricultural activities	Household roles and aspirations	Economic and financial constraints toward commercializing agricultural products
Chiquimula	Participants have free-range hens that they breed, use for self-consumption, and commercialize at a small-scale by selling eggs.	Participants have strict household roles as primary caregivers; their aspirations are focused on their children.	Husbands' agricultural work provides limited income.
	Participants help in specific agricultural tasks such as maize husking and picking beans, when necessary.	Participants have a negative perspective about the future, citing climate change and external shocks such as recurring natural disasters as concerns.	Both individual and group credits are poorly perceived and therefore not utilized by participants.
	Several agricultural activities, such as sowing seeds, are considered "male dominated" activities that women will not engage into.	Women's aspirations are limited to their gendered self-perception.	Group loans are negatively perceived because of prior experiences of missed payments from other group members.
	When husbands emigrate, women will generally not take on the role of agricultural producer but will end the lease on the land their husbands have.	Participants are interested in laying hen and pig farming programs.	Individual loans are negatively perceived because of "high interest rates," requirement of a guarantor, and fear of missing payments due to volatile earnings.
			Lack of access to markets is identified as a major economic barrier to seeking any form of credits for investment in secondary occupations such as buying more backyard animals.
	<i>Attitudes, beliefs, and participation in agricultural activities</i>	<i>Household roles and aspirations</i>	<i>Economic and financial constraints toward commercializing agricultural products</i>
Huehuetenango	Participants perform three activities: gathering and carrying water 3 times a day; livestock raising for household consumption and small-scale commercialization; managing home gardens for household consumption.	Participants are the households' primary caregivers but also raise backyard livestock and collect water for their homes.	Husbands' temporal agricultural work results in volatile work cycles and limited/reduced income.
	Participants have a wide range of animals including free range hens, pigs, sheep, goats, cattle, rabbits, and wild turkeys.	Climate change, natural disasters, food shortages, and inflation are main concerns.	Constant need to gather water for the household difficult women's ability to generate a secondary income stream.
	Small-scale backyard production is a woman's role, while agriculture is a man's role.	Participants want a solution to their water shortage problems.	Both individual and group loans are poorly perceived and therefore not utilized by participants.
	Women who have husbands who have emigrated, receive remittances (and spend them according to husband or third-party sender's instructions) and supervise agricultural work (if applicable), but do not directly participate in such work.	Participants are interested in programs that could expand their backyard livestock production, keep their animals healthy, and create entrepreneurship activities to increase the commercialization of their small-scale livestock byproducts.	Group credits are negatively perceived because of anecdotal evidence of missed payments from other group members.

ambitions and aspirations. These findings could be related to their day-to-day economic or financial hardship (Dalton et al., 2016), or because they "aspire to what they know or can imagine" (Bajema et al., 2002). Rietveld et al. (2020) explain the formation of aspirations through the concept of 'opportunity space,' which "refers to the constraints and opportunities associated with the socio-institutional and agro-ecological environment of the individual which affect one's agency." Participants' difficulty to express aspirations for the future could be associated to their lack of agency, determined by their restricted opportunity space. This is a significant barrier to women's ability to see wider possibilities and alternatives to generate

income (Kabeer, 2018; Kosec and Song, 2018; DeJaeghere et al., 2022).

For instance, when asked about future investments and potential activities they are interested in learning for income generation, women cite activities they are familiar with and have been involved in, or roles established for them by gender norms in their community. This is aligned with Carter's (2004) findings on the influence of community village-level social norms on intrahousehold behavior. However, Crossland et al. (2021) show that when women receive trainings on empowerment and agriculture, their aspirations to invest in and commercialize their agriculture products grow. This

also suggests that aspirations can grow with the proper changes and incentives.

Overall, these cultural findings highlight the importance of understanding women's internal factors (i.e., personal aspirations, self-perception, preferences for certain activities, gender stereotypes they hold) and external factors (i.e., community norms, time availability, household burden), when designing and implementing development programs oriented to increase women's participation in crop production and livestock activities. Without these considerations, the success of any program could be very limited.

Economic barriers

Participants in Chiquimula and Huehuetenango cite lack of resources as the main barrier for possibly expanding their small-scale livestock activities. Group lending schemes, as a possible mechanism to expand non-agricultural activities, will not be popular or attractive in these communities given the feedback from participants. In terms of individual loans, experiences are mixed. Some groups of women, specifically in communities closer to urban cities, Las Lomas (Chiquimula) and La Zeta (Huehuetenango), are willing to receive trainings and information on this type of financial instrument, while participants in more rural communities show higher risk aversion. These negative perceptions of credits may be related to lack of better tailored financial products for women as well as asymmetry of information on credit markets. Klapper and Parker (2011) find that limited access to finance is one factor that leads to differences between men and women in business performance indicators. This, coupled with other factors such as difficulties completing loan applications, lower financial literacy, and business experience, end up affecting women more than men. Further, as stated by Holland (2014), women's business creation process is influenced by internal factors (women's own hard work and determination and desire to overcome barriers) and external factors (a process of responding to the environment where they operate), highlighting the importance of interventions that will directly target women, but that will also make their environment more inclusive.

Similarly, challenges to access markets outside of their own communities is a clear barrier for participants to commercialize their small-scale livestock products as most of them do not have vehicles, roads are not paved, and larger markets are closer to municipal capitals, which are two to four hours away on foot from their communities. Any development project or program oriented toward increasing investments in crop or livestock production should consider these structural barriers.

While participants in Chiquimula generally face less fluctuations in their household income as crop production is year-round, they show more difficulties in visualizing how to generate additional sources of revenue as they only have home gardens and hens to work with. In Huehuetenango, in contrast, participants show more willingness to invest and create additional revenue streams with their wider range of small-scale livestock and their heightened exposure to markets outside their communities.

All in all, there are multiple economic and financial factors that may limit women's participation in livestock and other income-generating activities. Some of these barriers are structural and may require large investments (e.g., improving roads). Other barriers

require the design of programs or projects that address hurdles in a holistic way (e.g., provide affordable credit to increase output for sales, while implementing strategies to increase market access) combined with better-tailored interventions directly supporting women (e.g., technical assistance, financial literacy, flow of marketing information).

Opportunities for promoting women's participation in agricultural activities

While there are significant barriers that limit women's more active or expanded role in agricultural activities, the results and discussion of this study identify a series of opportunities that could help improve their participation, particularly in livestock production, and become more involved in income generating activities. Accessing paid work can have, in turn, a significant improvement in women's agency and empowerment (Kabeer, 2005, 2018).

First, considering participants in Chiquimula and Huehuetenango do not have a strong preference for crop-related activities, mainly due to cultural barriers and social norms that may be difficult to overcome in the short run, projects and programs can start by remarking the importance of generating alternative streams of income among younger women based on their preferences. These initiatives should include a gender-sensitive approach that fully accounts for women's needs and agency within their household dynamics (e.g., in terms of their workload and income decision-making). Understanding intra-household behavior, including individual roles within households and the levels of cooperation, is crucial for the design of policies and interventions (Doss and Quisumbing, 2020). Programs should also follow participatory and hands-on learning methodologies to develop technical livestock knowledge among women and have gender-responsive extension services and trainings (Rota and Urbani, 2021). This is important because gender norms influence the behaviors society expects from men and women; and in the processes of internalization and normalization, they end up generating a patriarchal division of roles, where women are dedicated to caring activities for family members and men to productive activities (Sumberg and Okali, 2013). These norms can certainly threaten the success of any program and should be considered when designing any production- or economic-related initiative for women.

Second, given that women project themselves as a family and not as an individual, which is another cultural barrier, initiatives could consider working on the visualization and identity formation of women before focusing on empowerment and agency development (Bianco et al., 2017; DeJaeghere et al., 2022). Developing a self-identity is an outcome of empowerment and can place women in a better position within their community or inspire other women as role models (Valodia, 2001; Al-Dajani and Marlow, 2013). Dalton et al. (2016) further develop a theoretical framework in which poverty itself can exacerbate women's failure to aspire to their own potential. Visualization and identity formation initiatives can thus aid women to pursue more job opportunities, which could result in an additional income source and alleviate, to some extent, their day to day economic and financial hardship. On this matter, Genicot and Ray (2017) propose a theory about socially determined aspirations, where if an individual's aspirations are slightly above their current livelihood level, these could lead to investments; while if individual aspirations are much higher, they could lead to frustration.

Participants are also generally worried on feeding their families and on becoming more resilient to economic or weather shocks. More programs promoting the creation of home gardens, livestock farming, and commercialization of vegetable patch and livestock byproducts would be helpful to continue securing household's food access and additional income streams (Valdivia, 2001). Promoting programs on financial literacy, specifically designed for homemakers in rural communities, could also help to overcome part of the economic barriers currently faced by participants. While women seem reluctant to engage with group or individual credits, they still show interest in participating in workshops and courses that include modules on financial literacy. In the same vein, the provision of continuous extension services on production, storage, and commercialization as well as on management and accounting could be helpful. Given the vulnerability to climate shocks among the studied population, these extension services should similarly include climate mitigation and adaptation strategies.

Additionally, building agency capacity through existing women groups and organizations and enabling the environment for improved credit and market access is key in this regard. Weak gender institutions can limit the effectiveness of interventions (Howland et al., 2021). The Ministry of Agriculture, Livestock, and Food and international cooperation organizations should consider working more closely with the private sector and existing organizations operating in the areas that could help participants access larger markets. On this matter, Howland et al. (2021) remark that there is a lack of articulation between governmental and international actors in Guatemala, which jeopardizes the effectiveness of interventions. This highlights the importance of stakeholders working closely and in an articulated way focusing on a gendered approach. This would be an opportunity to expand participants' outreach outside their (traditional) community market, encouraging the sustainable expansion of their small-scale livestock and home garden products. These opportunities could increase participation in these activities and consolidate secondary streams of income for women, reducing their perceived (latent) need to emigrate.

Finally, proposing a water project in the three communities in Huehuetenango that are suffering from water shortages would reduce the hours women spend travelling to and from water holes, freeing time to focus and engage in activities related to small-scale livestock farming and production as well as other possible income generating activities.

Conclusion

Cultural and economic barriers play a significant role in the participation of women in crop and livestock production systems. Cultural barriers limit women's roles and activities outside of their household, as they are the primary caretakers for the family unit and adopt secondary unpaid occupations. These are unpaid activities where women must devote a significant amount of their time, which prevent them from engaging in potential income-generating activities. These cultural barriers are also evident in women's role in crop related activities, as participants consider crop production a primarily male-led field. Despite the migration of men into other areas or their involvement in non-agricultural occupations, women do not take over men's crop-related tasks. We similarly find that women's main aspirations are to generate more income either through small-scale

livestock activities or other related occupations, or emigrate to improve their livelihoods and seek a better future for their family, despite emigrating being a risky and expensive activity. Women also show significant difficulty projecting into the future, envisioning themselves outside of the household, and verbalizing their personal ambitions and aspirations.

Economic and financial barriers, in turn, limit women's roles and agency outside of their household and their expanded participation in livestock production systems, which ultimately affects their aspirations. Lack of resources is their main barrier for expanding their small-scale livestock activities and commercializing their products, but individual and group loans are negatively perceived, despite being potential solutions. This further raises the question of whether current financial products are sufficiently attractive for women or better tailor-made products for women are needed, combined with information asymmetries. Additionally, lack of access to markets outside their own communities act as another significant economic barrier for the commercialization of their small-scale livestock and home garden byproducts.

Despite the multiple challenges faced by women, we identify and discuss opportunities that may be helpful in promoting women's participation in livestock production activities and achieving their aspirations. Opportunities that include: the promotion of programs that incentivize the creation and sustainability of home gardens, small-scale livestock farming, and commercialization of byproducts offering extensive support to both start new activities and aid through continuous extension services on production (including mitigation and adaptation strategies for climate change); financial literacy training; the promotion of interventions that build agency capacity through existing women groups and organizations; and the promotion of projects that propose community development that could both help women to take on more active roles in other activities as well as encourage people to stay in their communities.

Overall, it is important to promote interventions that can help women start viewing and transforming potential new activities, especially small-scale livestock farming and raising, into profitable and sustainable businesses that can become an important source of income for their families and empower them, reducing their perceived need to emigrate. A closer collaboration and coordination between the public and private sector, including the international cooperation, is necessary depending on the nature of the interventions. This also involves developing programs that can help women project into the future, better envision their potential, and raise their aspirations, which certainly requires additional studies to better understand this topic and provide more tailored recommendations and solutions that consider cultural and contextual factors.

Finally, despite the width of the topics analyzed, it is relevant to outline some potential limitations of the study. First, although several women actively engaged in the focus group discussions, some participants may still have been resistant to fully share their aspirations and (negative) experiences because of the social desirability bias, as participants generally know each other. Second, despite technicians from the Ministry of Agriculture, Livestock, and Food (MAGA) only served as 'entry points' between researchers and communities, their facilitation and prior coordination with community representatives could have affected the nature of the information reported. Looking forward, it will be relevant for future research to hold focus groups with male participants to include and analyze men's perspectives, as well as to expand to other communities in the same departments but

with different socioecological contexts, to discern whether the same or other cultural and economic barriers exist. This study focused, for example, on communities dominated by subsistence agriculture and livestock activities such that a natural expansion would be visiting communities with more market-oriented activities in the same regions.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving human participants were reviewed and approved by the International Food Policy Research Institute (IFPRI) Institutional Review Board. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

Author contributions

MH: led study design and implementation, data analysis, manuscript writing, and paper revision. CA, MB, DL, and DQ: contributed to study design, data collection, literature review, data analysis, manuscript writing, and paper revision. BR: contributed to study design, data analysis, manuscript writing, and paper revision. FO: contributed to study design and implementation. All authors contributed to the article and approved the submitted version.

Funding

This work was funded by the CGIAR Regional Initiative AgriLAC Resiliente. The contents and conclusions of the study are those of the

References

- Al-Dajani, H., and Marlow, S. (2013). Empowerment and entrepreneurship: a theoretical framework. *Int. J. Entrep. Behav. Res.* 19, 503–524. doi: 10.1108/IJEER-10-2011-0138
- Anderson, C. L., Reynolds, T. W., Biscaye, P., Patwardhan, V., and Schmidt, C. (2021). Economic benefits of empowering women in agriculture: assumptions and evidence. *J. Dev. Stud.* 57, 193–208. doi: 10.1080/00220388.2020.1769071
- Baada, J. N., and Najjar, D. (2020). A review of the effects of migration on the feminization of agrarian dryland economies. *J. Gender Agric. Food Secur.* 5, 1–12. doi: 10.19268/JGAFS.522020.1
- Bajema, D., Miller, W. W., and Williams, D. L. (2002). Aspirations of rural youth. *J. Agric. Educ.* 43, 61–71. doi: 10.5032/jae.2002.03061
- Ballara, M., Damianovic, N., and Parada, S. (2010). Aporte de ingreso económico de las mujeres rurales a sus hogares. Fondo de Desarrollo de las Naciones Unidas para la Mujer, UNIFEM, parte de ONU Mujeres.
- Beneria, L., and Sen, G. (1981). Accumulation, reproduction, and Women's role in economic development: Boserup revisited. *Signs J. Women Cult. Soc.* 7, 279–298. doi: 10.1086/493882
- Bianco, M. E., Lombe, M., and Bolis, M. (2017). Challenging gender norms and practices through women's entrepreneurship. *Int. J. Gen. Entrep.* 9, 338–358. doi: 10.1108/IJGE-10-2017-0060
- Black, J., and Sigman, Z. (2022). 50,000 lives lost during migration: analysis of missing migrants project data 2014–2022. IOM GMDAC. Available at: <https://missingmigrants.iom.int/sites/g/files/tmzbd1601/files/publication/file/2022%2050k%20deaths.pdf> (Accessed June 12, 2023).
- Carter, M. W. (2004). Gender and community context: an analysis of Husbands' household Authority in Rural Guatemala. *Sociol. Forum* 19, 633–652. doi: 10.1007/s11206-004-0699-0
- CGIAR. (2018). One size does not fit all – Climate change interventions for farmers in Guatemala. available at: <https://www.preventionweb.net/news/one-size-does-not-fit-all-climate-change-interventions-farmers-guatemala> (Accessed June 12, 2023).
- Corado, A. (2019). Caracterización de los sistemas de producción del ganado bovino en el municipio de Chiquimula, departamento de Chiquimula (Tesis). Universidad de San Carlos de Guatemala.
- Crossland, M., Paez Valencia, A. M., Pagella, T., Mausch, K., Harris, D., Dilley, L., et al. (2021). Women's changing opportunities and aspirations amid male outmigration: insights from Makeni County, Kenya. *Eur. J. Dev. Res.* 33, 910–932. doi: 10.1057/s41287-021-00362-8
- Dalton, P. S., Ghosal, S., and Mani, A. (2016). Poverty and aspirations failure. *Econ. J.* 126, 165–188. doi: 10.1111/eoj.12210
- Deere, C. D. (2005). The feminization of agriculture? Economic restructuring in rural Latin America (No. 1). UNRISD Occasional Paper.
- Deere, C. D., Lastarria-Cornhiel, S., Ranaboldo, C., and Costas Monje, P. (2011). Tierra de mujeres: reflexiones sobre el acceso de las mujeres rurales a la tierra en América Latina. Fundación Tierra. available at: https://www.rimisp.org/wp-content/files_mf/1377805458tierramujeresreflexionesaccesotierraenamericalatina.pdf (Accessed June 12, 2023).
- DeJaeghere, J., Wiger, N. P., Le, H., Luong, P., Ngo, N. T. H., Vu, T. T., et al. (2022). Why do aspirations matter for empowerment?: discrepancies between the A-WEAI

authors and do not necessarily reflect the views of the International Food Policy Research Institute, International Center for Tropical Agriculture, or the Universidad Mariano Galvez.

Acknowledgments

The authors acknowledge the valuable contribution of Ana Maria Paez-Valencia (International Center for Tropical Agriculture) in the initial design of the interview guide for the focus groups. The authors would also like to thank local personnel in Chiquimula and Huehuetenango from the Ministry of Agriculture, Livestock and Food (MAGA) of Guatemala for their important collaboration in facilitating the implementation of the focus groups in the visited communities.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fsufs.2023.1185756/full#supplementary-material>

- domains and aspirations of ethnic minority women in Vietnam. *World Dev.* 159:106057. doi: 10.1016/j.worlddev.2022.106057
- Deutsh, R., Duryea, S., and Piras, C. (2001). Empowering women to achieve food security: labor markets and employment. *Focus* 6, 7–12.
- Doss, C. R., and Quisumbing, A. R. (2020). Understanding rural household behavior: beyond Boserup and Becker. *Agric. Econ.* 51, 47–58. doi: 10.1111/agec.12540
- Dufló, E. (2012). Women empowerment and economic development. *J. Econ. Lit.* 50, 1051–1079. doi: 10.1257/jel.50.4.1051
- Espinal, M., and Witkowski, K. Proyecto EUROCLIMA-IICA, Proyecto Insignia Resiliencia y Gestión Integral de Riesgos en la Agricultura, Proyecto Insignia Resiliencia y Gestión Integral de Riesgos en la Agricultura & Eje Transversal Innovación y Tecnología (ETIT). (2015). Estudio regional sobre género, agricultura y cambio climático. Estado y perspectivas desde la institucionalidad en Latinoamérica. Available at: <https://repositorio.iica.int/handle/11324/3043> (Accessed June 12, 2023).
- FAO. (2011). The state of food and agriculture 2010–11: Women in agriculture. Closing the gender gap for development. Available at: <https://www.fao.org/3/i2050e/i2050e.pdf> (Accessed June 12, 2023).
- Faria, N. (2009). “Economía feminista e agenda de lutas das mulheres no meio rural” in (org) *Estatísticas Rurais e a Economia Feminista: Um olhar sobre o trabalho das mulheres*. ed. A. Butto (Brasília: MDA)
- Fletschner, D., and Kenney, L. (2010). Rural Women’s access to financial services: Credit, savings and insurance. Available at: <https://www.fao.org/publications/card/en/c/75438ae9-9c1c-5c56-b674-1e1fe52f6c03/> (Accessed June 12, 2023).
- Fuentes, J. (2005). Evaluación de dos sub- sistemas de producción ovina, en la meseta de los Cuchumatanes, departamento de Huehuetenango (Thesis). Universidad de San Carlos de Guatemala. Available at: <https://core.ac.uk/download/pdf/35294459.pdf> (Accessed June 12, 2023).
- Genicot, G., and Ray, D. (2017). Aspirations and inequality. *Econometrica* 85, 489–519. doi: 10.3982/ECTA13865
- Grassi, F., Landberg, J., and Huyer, S. (2015). *Running out of time: The reduction of women’s work burden in agricultural production*. Rome: Food and Agricultural Organization of the United Nations.
- Gumucio, T., Mora Benard, M. A., Clavijo, M., Hernández, M. C., Tafur, M., and Twyman, J. (2015). Silvopastoral systems in Latin America: mitigation opportunities for men and women livestock producers. CCAFS policy brief. CGIAR research program on climate change, agriculture and food security (CCAFS), Copenhagen.
- Hendriks, S. (2019). The role of financial inclusion in driving women’s economic empowerment. *Dev. Pract.* 29, 1029–1038. doi: 10.1080/09614524.2019.1660308
- Herrero, M., Grace, D., Njuki, J., Johnson, N., Enahoro, D., Silvestri, S., et al. (2013). The roles of livestock in developing countries. *Animal* 7, 3–18. doi: 10.1017/S1751731112001954
- Holland, N. (2014). Cultural and socio economic experiences of female entrepreneurs in Brazil and the United States: an exploratorial and empirical analysis. *J. Women Entrepreneursh. Educ.* 1, 3–37.
- Howland, F., Acosta, M., Muriel, J., and Le Coq, J. F. (2021). Examining the barriers to gender integration in agriculture, climate change, food security, and nutrition policies: Guatemalan and Honduran perspectives. *Front. Sustain. Food Syst.* 5:664253. doi: 10.3389/fsufs.2021.664253
- Ibáñez, M. J., and Guerrero, M. (2022). Women’s empowerment and emancipation through entrepreneurship: extending professor Alistair Anderson’s contributions. *Entrepreneursh. Region. Dev.* 34, 722–741. doi: 10.1080/08985626.2022.2075038
- INE. (2003). IV Censo Nacional Agropecuario. Available at: <https://www.ine.gob.gt/sistema/uploads/2014/01/16/cv9H2R2CyhS1n0c1XfKqXVf4pLlxONTg.pdf> (Accessed June 12, 2023).
- INE. (2015). Republica de Guatemala: Encuesta Nacional de Condiciones de Vida (2014). Available at: <https://www.ine.gob.gt/sistema/uploads/2016/02/03/bwc7f6t7asbei4wmuexonr0oscpshkyb.pdf> (Accessed June 12, 2023).
- INE. (2017). Guatemala VI Encuesta Nacional de Salud Materno Infantil (ENSMI) 2014–2015: Informe Final. Ciudad de Guatemala. Available at: <https://www.ine.gob.gt/sistema/uploads/2021/04/27/20210427195413QDinUvuRa9GjopyXaTuNMxc3gd6jq1Q1.pdf> (Accessed June 12, 2023).
- INE. (2018). *XII Censo Nacional de Población y VII de Vivienda*. Guatemala: INE.
- INE. (2019). Tablero ENEI. Available at: <https://www.ine.gob.gt/tablero-enei/> (Accessed June 12, 2023).
- International Labour Organization. (2019). Empowering women in the rural economy. ISBN 9789220308028. Available at: https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/publication/wcms_601071.pdf (Accessed June 12, 2023).
- Kabeer, N. (2005). Gender equality and women’s empowerment: a critical analysis of the third millennium development goal 1. *Gen. Dev.* 13, 13–24. doi: 10.1080/13552070512331332273
- Kabeer, N. (2018). Gender, livelihood capabilities and women’s economic empowerment. Reviewing evidence over the life course. *Gender & Adolescence: Global Evidence* (GAGE).
- Klapper, L., and Parker, S. (2011). *Gender and the business environment for new firm creation*. World Bank research observer. Geneva: World Bank 26, 237–257
- Kosec, K., and Song, J. (2018). *Aspirations and women’s empowerment: evidence from Kyrgyzstan*. Washington: International Food Policy Research Institute (IFPRI).
- Lastarria-Cornhiel, S. (2008). Feminización de la agricultura en América Latina y África. Tendencias y fuerzas impulsoras. RIMISP, Centro Latinoamericano para el Desarrollo Rural. Available at: https://rimisp.org/wp-content/files_mf/files_mf/1366830040DTR_No.11_Lastarria.pdf (Accessed June 12, 2023).
- Nerger, M. (2012). Getting ahead of climate change in Guatemala’s Western highlands. Available at: <https://www.rainforest-alliance.org/in-the-field/getting-ahead-climate-change-guatemala-western-highlands/> (Accessed June 12, 2023).
- Paulilo, M., and Silva, C. (2007). A luta das mulheres agricultoras: entrevista com Dona Adélia Schmitz. *Revista de Estudos Feministas* 15, 399–417. Florianópolis doi: 10.1590/S0104-026X2007000200007
- Quisumbing, A., and Meinzen-Dick, R. (2001). Empowering women to achieve food security: labor markets and employment. *Focus* 6, 1–12.
- Rietveld, A. M., van der Burg, M., and Groot, J. C. (2020). Bridging youth and gender studies to analyse rural young women and men’s livelihood pathways in Central Uganda. *J. Rural. Stud.* 75, 152–163. doi: 10.1016/j.jrurstud.2020.01.020
- Rota, A., and Urbani, I. (2021). IFAD advantage series: the small livestock advantage. A sustainable entry point for addressing SDGs in rural areas (no. 2356–2021-577).
- Sumberg, J., and Okali, C. (2013). Young people, agriculture, and transformation in rural Africa: an “opportunity space” approach. *Innovations* 8, 259–269. doi: 10.1162/INOVA_00178
- The World Bank, FAO, and IFAD. (2009). *Agricultura y Desarrollo rural: manual sobre género en agricultura. Agriculture and Rural Development*; Washington, DC: World Bank.
- Triana, N., and Burkart, S. (2019). *Gender and the cattle sector in Latin America: recent trends in literature*. Colombia: International Center for Tropical Agriculture (CIAT) Cali, CO. 12.
- Valdivia, C. (2001). Gender, livestock assets, resource management, and food security: lessons from the SR-CRSP. *Agric. Hum. Values* 18, 27–39. doi: 10.1023/A:1007613031102
- Valodia, I. (2001). Economic policy and Women’s informal work in South Africa. *Dev. Chang.* 32, 871–892. doi: 10.1111/1467-7660.00230
- World Bank Group. (2015). Women in agriculture: the impact of male out-migration on Women’s agency, household welfare, and agricultural productivity. Report no: AUS9147.
- World Bank national accounts data, OECD National Accounts data files. (2021). *Agriculture, forestry, and fishing, value added (% of GDP) – Guatemala*. Geneva: WHO