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**Un/Associated: Accounting for Gender Difference and Farmer Heterogeneity  
Among Peruvian Sierra Potato Small Farmers**

**Anouk Patel-Campillo**

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**Abstract**

Recognizing the challenges faced by small farmers, international institutions have encouraged national governments to foster the collective organization of small farmers and farmer membership through policy interventions that target rural populations, and more specifically ‘women’ and ‘marginalized farmers’. Yet, access to membership continues to elude the most disadvantaged small farmers. Based on Peru’s 2012 National Agricultural Census, we conduct a comparative analysis of small Peruvian potato farmers to identify the social markers that influence membership status. We conduct cross-group (women versus men) and intra-group (among women and among men) comparisons to tease out gender difference and farmer heterogeneity and the social markers that account for exclusion. We suggest that considering women and marginalized farmers as homogeneous and residual populations obscures the social markers that differentiate small farmers homogenizing women as a group and rendering some men and masculine gendered practices analytically invisible. This study contributes to the literature on gender and the collective organization of farmers by highlighting gender difference and farmer heterogeneity and points to gender-based inequality as well as other forms of inequality that influence the membership status. Our analysis shows that men comprise a larger proportion of potato farmers, yet the membership status of women and men is nearly equal and that associated women farmers hold the highest percentage of land titles while unassociated men hold the lowest. We also

find a large number of districts without the presence of associated women potato farmers indicating the existence of gender-based spatial inequality. Our analysis of household composition points to the feminization of women farmer households due to the absence of male partners and a large presence of elderly women in comparison to men farmer households. Unlike for men, the presence of a partner and/or elderly household members has no effect on women's membership status. Similarly, the presence of girls (and not boys) under six years of age has a negative effect only for women's membership. We also find that for women, it is more important to have higher levels of education than men to participate in farmer organizations. Our intra-group comparisons indicate unassociated and associated women are differentiated based on a combination of social markers including education, economic and domestic partnership, language and land ownership. Overall, our analysis shows that while gender-based inequality persists, there are other cross-cutting markers of social differentiation among women and men that influence farmer membership status.

Keywords: gender, cooperatives, masculinity, inequality, rural development

## **1. Introduction**

The United Nations and other international institutions declared 2012 the International Year of Cooperatives (IYC) charting out a new policy action plan to encourage national governments to take an active role in fostering the collective organization of small farmers. The impetus and underlying justification for government involvement in the organization of agricultural production is premised on the importance of

facilitating the articulation of markets at the point of production to promote development and alleviate rural poverty. The collective organization of farmers is not a new phenomenon. Rather, as Agarwal points out, governments have experimented with collectivization with varying degrees of ‘success’ to revitalize the rural sector (2010). What is different from previous socialist and state-planned forms of collective organization, however, is the emphasis placed by international organizations on the promotion of market integration, for profit-business orientation and the individualistic and democratic values associated with (market) access and participation in farmer-led collectivities<sup>1</sup>.

Within this context, membership in farmer organizations provides an opportunity to overcome some of the most pressing production, marketing, and logistics challenges faced by small farmers (Mudege et al. 2015, Fischer and Qaim 2012, Key, Sadoulet, and Janvry 2000, Mojo, Fischer, and Degefa 2017, Barham and Chitemi 2009, Markelova and Mwangi 2010, Echánove and Steffen 2003, Patel-Campillo 2011, Devaux et al. 2009). More specifically, membership in small farmer organizations has been shown to improve intra-household resource distribution (Meemken and Qaim 2018) and profitability (Birthal et al. 2017), as well as help reduce transaction costs and information asymmetries while improving small farmer access to resources and social and professional networks (Mudege et al. 2015, Orsi et al. 2017, Hellin, Lundy, and Meijer 2009, Wossen et al. 2017).

The reorganization of the supply chain at the production end through the collective organization of small farmers also has the potential to shift power asymmetries between

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<sup>1</sup> At the international level, ‘cooperatives’ are often used to signal the collective organization of farmers. However, it is worth noting that the collective organization of small farmers may take different forms and roles often reflected in labels including ‘cooperatives’ and ‘associations’. Here, we use the terms ‘cooperative’ and ‘associations’ based on the premise that both these terms refer to the collective organization of small farmers for the purpose of ameliorating the challenges often faced by individual small farmers. While assessing the roles and mandates of cooperatives versus associations is outside the scope of this research, where appropriate, we retain the designation of ‘association’ used by the Peruvian Ministry of Agriculture.

producers and buyers. By pooling their production and marketing activities via producer cooperatives or associations, small individual farmers can curb competition among themselves, increase their bargaining power vis-à-vis buyers and collectively negotiate for better prices, and terms of sale while working to ensure payment compliance through formal sales agreements (Patel-Campillo 2011, Bacon 2005). Thus, as members of collective organizations, small farmers can potentially reduce supply-side competition and are more likely to increase their leverage vis-à-vis buyers than as individual suppliers. Within this context, the aim for policymakers is to foster the creation of farmer organizations and increase participation so that small farmers can potentially overcome scale-related challenges (Hellin 2012, Hellin, Lundy, and Meijer 2009, Mudege et al. 2015), increase their leverage over buyers (Author 1, 2011; Mudege et al. 2015), and gain greater resilience (Ashkenazy et al. 2018, Bjørkhaug and Knickel 2018) albeit within a traditional productivist agro-food system.

While membership in farmer organizations has the potential to benefit small farmers, it alone does not guarantee that the most disadvantaged small farmers can gain access or that the benefits of collective organization are shared equally among members. Rather, collective forms of farmer organization may exclude groups that need it most, including women and the poorest farmers (Oduol et al. 2017, Miller 2012, Mudege et al. 2015, Weinberger and Jütting 2001, Mojo, Fischer, and Degefa 2017, Escobal and Cavero 2012, Meemken and Qaim 2018, Tobin, Glenna, and Devaux 2016, Bernard and Spielman 2009, Lyon 2008). Echoing long-standing academic findings pointing to the economic, social and cultural challenges that deny women farmers access to the resources and benefits associated with membership in collective organizations, international institutions are recognizing the limits to inclusion in farmer organizations for existing as well as

prospective women members. For instance, when advocating for small farmer cooperatives, the U.N. Food and Agriculture Organization (FAO) points to low levels of participation by women and the lack of women in leadership and decision-making positions as evidence of gender inequality within farmer cooperatives (2012). As a corrective, international organizations are advocating for the introduction of organizational norms and mechanisms including gender sensitive membership criteria and gender quotas to promote gender equity in farmer organizations (Lyon 2008).

Acknowledging that agricultural production is not gender neutral and that farmer organizations are neither necessarily inclusive nor effective in catering to the needs of women and other disadvantaged farmers is pivotal if farmer organizations are to meet the expectations set out by the international community and local policymakers. This is why international institutions have explicitly emphasized the importance of considering gender - and women more specifically, in national policy interventions designed to strengthen the rural sector (FAO, 2012, ILO, 2015, The World Bank 2009).

For agricultural policy to be effective, however, it is important to clarify what analytical categories mean given that the agricultural sector is highly diverse in its composition (Lowder, Scoet, and Raney 2016, Graeub et al. 2016). This is the case for categories such as ‘women’, ‘men’ and ‘marginalized farmers’, as this nomenclature often obscures markers of social difference that may contribute to persistent social exclusion. As Mohanty (1984), a feminist scholar, argued ‘women’ are not a homogenous group. Rather, women can be differentiated across class, domestic partnership, race and ethnicity among others. But defining the target population is not unproblematic given that policies and the policymaking process is neither value neutral nor free from assumptions. That is why as Bacchi points out, the careful examination of how the policy ‘problem’ is represented, the

binaries used and the assumptions embedded in policies that have already been formulated as well as in the policymaking process can ‘... reveal the operation of conceptual logics that may act to constraint or limit our understanding of an issue.’ (2009, 7).

In formulating their plans to include women and disadvantaged farmers in farmer organizations, policymakers often assume that women and marginalized farmers are a homogenous group (Food and Agriculture Organization (FAO) 2012, The World Bank 2009, World Bank Group 2017). As such, women farmers (one side of the binary) are often represented as the ‘problem’ population whose lack of access to membership is assumed to be the same across markers of social differentiation including class, race, and ethnicity, whereas for men (the other side of the binary), who remain largely invisible, this is not the case. Categorizing women as a homogenous group may explain why the poorest women often do not benefit from policy interventions (The World Bank 2009). Therefore, it is important not only to conduct analyses of gender that seek to understand gender-based inequality between women and men but also to analyze intra-group differences to further distil other forms of inequality that may account for persistent as well as changing forms of marginalization. Similarly, the ‘problem’ population identified in the nondescript and residual category of ‘marginalized farmers’ signals exclusion and disadvantage based on unidentified attributes, other than their condition as marginalized. Therefore, from an analytical and policy perspective, the heterogeneous composition of small farmers and their households needs to be recognized and the markers of social differentiation identified. From a policy perspective, specifying markers of social differentiation and forms of inequality that characterize women and men small farmers can potentially allow for more appropriately targeted interventions.

Equally important is to note that while much of the research on gender and small farmer organizations sheds light on some of the factors that influence the challenges some women face in small-scale agricultural production, ‘gender’ is not a static, but a dynamic and relational analytical category that reflects broader societal changes including social mobility (upward and downward) as well as changes in the gender norms and practices ascribed to women and men. From this perspective, the social construct of ‘gender’ does not only concern the study of women but considers the relationship between men and women as well as within these socially constructed categories. Equating the analysis of gender with the analysis of how women fare compared to men obscures differences among women and among men rendering gender analyses incomplete. Based on the 2012 IV National Agricultural Census (CENAGRO), we contribute to the relational analysis of gender and small farmer heterogeneity by conducting intra and cross-group comparisons among small Peruvian potato farmers to shed light on gender-based inequality and other markers of social differentiation that influence their collective organization.

Potato farming is one of the most important crops in Peru, with approximately 367 thousand hectares under production, and an annual contribution to the national agricultural GDP of 12% (Instituto Nacional de Estadística e Informática n.d.). According to the 2012 CENAGRO, there are over 641,982 farmers dedicated to potato production of which approximately 602,360 are small farmers of which 99% (or 595,139) are clustered in the highlands, a region characterized by the continued atomization of land (Escobal, Revesz, and Trivelli 2006), and the highest poverty rate in Peru. At the household level, income from potato farming is used by potato small farmer households to cover basic necessities (Bernet, Delgado, and Sevilla 2008). Potato small farmers face increasing pressures including supply-side competition, increased buyer leverage, and limited government



support (Escobal and Cavero 2012, Bernet, Delgado, and Sevilla 2008, Minag n.d., INCOPA 2011). For small farmers who comprise the majority of potato producers, overcoming the challenges related to economies of scale, lower transaction costs, and access to credit, networks, logistics, technology, and information among others (ibid) through their incorporation into farmer organizations is considered necessary to sustain their productive activities (Ministerio de Agricultura -OGPA-DGPA 2003).

Recognizing the importance of the collective organization of small farmers, the Peruvian Department of Agriculture (MINAGRI) has set out to facilitate membership in farmer organizations for half a million small farmers (2012, 88). MINAGRI's aim to foster small farmer membership has the potential to strengthen potato small farmers by easing production, chain governance and institutional challenges. This could have significant implications particularly for women potato farmers. Yet, MINAGRI's strategic plan does not adequately recognize the heterogeneity of small farmer agriculture potentially limiting the plan's effectiveness to integrate the most disadvantaged and socially differentiated small farmers. From a policy perspective, this is not just a matter of semantics. Rather, lack of clear definitions regarding target populations obscures the basic composition and diversity of the agricultural sector hindering effective policy dialogue (Lowder, Skoet, and Raney 2016) and implementation. Given the production challenges faced by Peruvian potato small farmers and efforts by the national government to encourage membership, the examination of the social markers that influence membership among Peruvian potato small farmers provides an opportunity to explore the significance of gender difference and farmer heterogeneity, and to highlight the importance of considering the meaning of social categories when defining target populations in the policymaking process.

Unlike other national agricultural statistical databases in Latin America , CENAGRO's data used in this study is disaggregated at the district level (the lowest political division in Peru) and by sex. This provides an opportunity for a more granular analysis across our independent variables to discern the social markers that correlate with membership status via cross-group (men versus women) as well as intra-group comparisons (among women and among men). The intra-group and cross-group comparative methodological approach applied here opens up new opportunities for quantitative research aiming to discern variation in social difference between and among women and men based on social markers including, gender, geographic location, household composition, land tenure, and forms of land acquisition. This study contributes to the literature on gender and the collective organization of small growers by starting from the premise that women and men are not homogenous analytical categories but are differentiated by a range of social markers including but not limited to gender. In addition, broadening the scope of the investigation to systematically include men as well as intra-group variation sheds light on variegated gender practices and relations without which the analysis of gender remains limited.

In the next section, we start by reviewing the literature on the challenges related to the collective organization of farmers, and link land ownership and the gender asset gap to farmer organization membership, and incorporate some insights from the literature on masculinities to highlight the importance of analyzing gender from a relational perspective. In section 3, we describe our data and methodology and report our results in section 4. In section 5, we analyze and discuss our findings, and we conclude the article by reflecting on our analysis and offering some avenues for further research and policy suggestions.

## **2. Collective Farmer Organization and Gender: Challenges and Opportunities**

There is much evidence that collective forms of organization can improve a small farmer production and marketing activities. However, it is also recognized that farmer organizations may not be accessible or even exclude the most disadvantaged farmers (Mudege et al. 2015, Bernard and Spielman 2009, Reardon et al. 2009, Manchón and Macleod 2010, Lyon, Bezaury, and Mutersbaugh 2010, Lyon 2008, Wossen et al. 2017). This is particularly the case for women farmers. Gender specialists have long recognized that women play important productive and reproductive roles in agriculture as individual farmers and laborers, but also as part of agricultural households and rural communities (Boserup 1970). Yet, some women farmers have been systematically disadvantaged through a variety of social and cultural norms and practices as well as through political and economic structures enabling gender-based inequalities to persist at the household, community and national levels (Agarwal 1994, Boserup 1970, Deere and De Leal 2014, Razavi 2003, Chant 1997).

A notion that captures some of the mechanisms associated with gender inequality is what Deere and colleagues identify as the ‘gender asset gap’ (Deere and León 2003). Deere and colleagues (2006) argue that while income poverty has been used as a marker of gender inequality a more appropriate way to explain the persistence of gender inequality across generations and income levels is asset accumulation (2006, 2). From this perspective, one of the most important factors that contribute to the gender asset gap is land ownership and the means by which land is acquired –inheritance, land markets, and the state (ibid, 5). This view points to land ownership as an important aspect underlying gender-based inequality because social and cultural norms as well as institutional regulatory contexts governing

land acquisition systematically contribute to the marginalization of women by favoring men (Deere and León 2003, 931).

Across Latin American countries, studies find that land ownership tends to be more biased against women and that men benefit more than women from all forms of land acquisition in absolute terms (ibid, 929)<sup>2</sup>. In Peru, for instance, women represent 31.9% of small farmers of which 62.8% do not have land titles. In the case of membership status, this is significant because being asset poor and not having land titles to their names often prevents women from accessing the resources necessary to improve and sustain their agricultural activities. Farmer organizations often require prospective members to show proof of land ownership placing women at a disadvantage when seeking to benefit from farmer-led collectivities. Moreover, not having titles to land in their name can potentially prevent women from using it as collateral to access credit and loans without which women are precluded from conducting and growing their productive activities, including meeting production requirements often set by farmer organizations.

Deere and León (2003) also point out that inheritance stands out as the principal means of land acquisition for women. In Peru, at the national level, 2012 IV CENAGRO figures show that a higher percentage of women acquired land through inheritance –the most widespread form of land acquisition, compared to men whereas a higher percentage of men in comparison to women accessed land via land markets. While mirroring national patterns, aggregate regional trends show some important variation in the magnitude of the

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<sup>2</sup> While an analysis of local land rights, understandings and definitions of land ownership as well as how land ownership is managed at the household level is outside the scope of this study, we thank one of our anonymous reviewers for pointing out that in some contexts such as some rural districts in Uganda, women's customary land ownership may not be necessarily associated with benefits for women or their individual rights (see Doss, Meinzen-Dick, and Bomuhangi 2014).

asset gap. As Table 1 illustrates, in the Peruvian highlands 59.2% of women producers acquire land by inheritance and 32.3% access land via land markets, in contrast to 52.6% and 36.9% of men who acquire land through inheritance and land markets respectively. Similarly, in the Peruvian coast, 47.1% and 23.7% of women acquire land by inheritance and land markets, respectively; whereas for men these numbers are 33.1% and 30.4%. For the Peruvian jungle 33.3% of women and 24.2% of men acquire land by inheritance and 42.8% of women and 47.0% of men acquire land via land markets. This points to regional variation regarding the magnitude of the gender asset gap among women farmers, with the Peruvian highlands registering the lowest gender gap in land acquisition by inheritance whereas the lowest gap via land markets is in the Peruvian jungle.

In Peru, gendered forms of land acquisition and the significance of women's access to land via inheritance is less definitive at the district level, the lowest level of administrative division (See Table 1). At the district level, acquisition via inheritance and land markets is not as clearly associated with gender as it is at the national or regional levels. For instance, as Table 1 illustrates, in some districts a higher percentage of men acquire land via inheritance compared to women and, in other instances a higher percentage of women acquire land via market transactions. These illustrative figures indicate that when considering districts, the gender asset gap and patterns of land acquisition based on gender are less unambiguous. Therefore, whereas at the national level, the gender asset gap and gendered patterns of land acquisition are clear –these become less discernible at the district level. From this perspective, because gender alone cannot be associated with patterns of land acquisition in districts where land acquisition by inheritance and via the land markets is mixed, it is important to consider additional markers of social differentiation that may

account for variation in the socio-economic standing of rural women as well as men and the persistence of rural inequality.

[Table 1 here]

While landownership is important in ameliorating gender-based inequality, differences in asset accumulation and social markers other than gender may also create a membership gap among women. In a study of fair trade-organic coffee, Lyon and colleagues (2010) find that among women cooperative members those with owner-operator status reaped the most significant benefits from their membership even within the context of increased overall vulnerability to price fluctuations and inflation (98). This finding not only shows the importance of land ownership for women's membership status but it also points to the emergence of related forms of social differentiation among women cooperative members. In a study of how social and gender norms influence women's empowerment in potato farmer groups in Malawi, Mudege and colleagues' (2015) find that while persistent gender roles adversely affect women cooperative members (ibid, 91), not all women members are affected equally. When assessing differences in the participation of women members, Mudege and colleagues' findings show that single, widowed and divorced women are able to actively participate in groups in contrast to married women (ibid, 96). These examples highlight the importance of analytically considering women not as a homogenous group but one that is differentiated along a variety of social markers. Because gender is often equated with women as an undifferentiated analytical group, some of the social markers that may account not only for gender-based inequality but for other forms of social differentiation between and among women and men remain obscured.

Although analyses of rural masculinity remain sparse in comparison to those focusing on rural women, a useful starting point for the analytical examination of gender norms and practices associated with men is Connell's construct of 'hegemonic masculinities', which highlights the hierarchies and exclusionary practices that produce and reproduce power and privilege within the gender order (Connell 1998). This analytical construct is useful in placing the dominant aspects of masculinity that enable certain 'men to achieve and protect a hegemonic position', which is then made invisible and naturalized (Campbell and Bell 2000, 535). Far from being a static conceptualization of the dominant aspects and practice of masculinity, what is important to note here is that 'hegemonic masculinity is not a fixed character type, always and everywhere the same' (ibid), nor is it '...a fixed entity embedded in the body or personality traits of individuals' (Connell and Messerschmidt 2005, 836). Rather, it is conceptualized as a dynamic set of gendered practices and relations that are actively constructed through market-state-society interactions across time and space (Patel-Campillo 2012), and '...not a self-reproducing system' (Connell and Messerschmidt 2005, 844).

While hegemonic masculinity refers to forms of masculinity that lend power and privilege to men, Connell also recognizes that not all men fall within this spectrum of dominance and that there is variation in men's position vis-à-vis each other and the gender order (Connell 1998). While the nomenclature of 'hegemonic' masculinities may obscure the relational aspects of masculinity expressed in a plurality of gendered practices associated with masculinity (Campbell and Bell 2000, 537), what is important to note is that plural masculinities '...exist in complex power relations with each other, and with various constructions of femininity' (ibid), and that these constructs do not remain unchanged. Here, we suggest that apportioning power to some men vis-à-vis other men and

the gender order does not occur in a vacuum but requires organizing and stratifying mechanisms around which gender binaries can be individually internalized, enacted and collectively accepted. In this study, we point to the gendered practice of breadwinner as an example of an organizing and stratifying mechanism that consolidates and filters some men's position vis-à-vis the gender order depending on the domain where it unfolds.

Within the domain of the heteronormative household, the male breadwinner gender practice stands on one side of the binary and in opposition of the gender practices linked with women as homemakers. Related with the gender division of labor –where women perform unpaid and domestic work while men perform paid work in the public realm of the labor market, the gender practice of breadwinner often assigns gender-based privileges to men (Lewis 2001, Creighton 1996, Janssens 1997) that are individually and collectively internalized and naturalized. These gender-based privileges tend not only to protect men's hegemonic position within the gender order of the household but may also serve to harness household resources often sustaining or reasserting that position. In the context of this study, we point to the ability by male breadwinner potato farmers to command domestic and agricultural labor from their partners and elderly males as a reflection of their hegemonic position within the household. From this perspective, it is important to consider the relational social construction of masculinity and femininity in the analysis of gender (Tyler and Fairbrother 2013), and the stratifying mechanisms that intervene in fluid social constructions and gendered practices.

While gender order stratifying mechanisms persevere, albeit in different forms across space and time, they are also challenged. For instance, the changes affecting the livelihood strategies of rural households such as labor migration and displacement, land grabbing and the consolidation of production, and climate change among others has



increased the visibility of the activities of women as breadwinners (Radel et al. 2012, Rao 2012, Jokisch 2002, Silberschmidt 2001). Yet, in rural households, the breadwinner role is often associated with masculinity despite rural women's contributions via paid and unpaid work in and outside the household. Thus, what has changed is that rural women are increasingly being recognized for their breadwinner activities loosening gender practices that traditionally ascribed breadwinning status and responsibilities only to men. What perseveres, however, is that while rural women often shoulder breadwinner responsibilities, they may not necessarily be able to harness the privileges associated with this stratifying mechanism. As such, while the scope of the stratifying mechanism of breadwinner has changed to recognize rural women's long-standing contributions to household reproduction, its role in stratifying the gender order has not.

In this analysis of Peruvian potato small farmers, we contribute to the literature on gender by pointing to how stratifying mechanisms influence the membership status of women and men potato farmers and by considering the plurality as well as the persistence of gender practices. We do this through the examination of markers of social differentiation, namely household size and composition, which serve to signal the privileges and responsibilities associated with breadwinner gendered practices. Also, through intra and cross-group comparisons among potato farmers across a range of variables, this study contributes to the literature on gender and the collective organization of farmers by drawing attention to persistent gender-based inequality as well as other forms of social differentiation.

### **3. Data and Methodology**

Potato farming is one of the most important agricultural activities in Peru. This is especially for potato small farmers who are clustered in the highlands region, the poorest region in Peru, and comprise approximately 99% of small farmers. While potato farming has a long tradition in Peru, in the last decades potato farming has experienced important change including the atomization of land under production, increased competition among small farmers, increased buyer leverage, and limited government support (INCOPA 2011). From this perspective, MINAGRI's aim to foster small farmer membership in collective organizations is key to meeting the production and marketing challenges faced by potato small farmers.

Based on the 2012 IV National Agricultural Census (CENAGRO) conducted by the Peruvian National Institute of Statistics (INEI), this study focuses on individual potato small farmers (with five hectares of land or less),<sup>3</sup> and who either belong to a farmers' association or are not associated to examine the social markers that may influence membership status. The CENAGRO database used here provides data disaggregated by sex and at the district-level, the smallest political unit in Peru, which provides an opportunity for a granular exploration of a range of variables that may influence the membership of women and men potato farmers. The INEI identifies respondents as individual farmers who are responsible for farm activities and who are the main decision makers in the administration and management of farm activities including investment, use of resources and technical decisions and who may not necessarily be heads of household. The data collected by INEI is at the farm level and a farm may be comprised of more than one plot of land and is managed by the individual respondent. We purposively selected individual

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<sup>3</sup> Here, it is important to note that the farmers included in the census may engage in additional off farm non-agricultural economic activities.

small farmers who produce in similar climate conditions in the Quechua and Suni agro-ecological zones<sup>4</sup>, which are classified as high-potential potato-growing areas and are located between 2,300 and 4,000 meters above sea level (Fries and Tapia 2007). The total sample consists of 495,114 farmers, of which 159,204 (32.2%) are women and 335,910 (67.8%) are men. Table 2 shows that only 14.8% of small farmers in the total sample belong to an association, this percentage changes to 14.1% (or 22,468) for women and 15.2% (or 50,898), for men.

To identify socio-demographic markers that may account for membership status in farmer associations, we estimate a Probit specification. There are only two feasible alternatives in our model: (1) participate in a farmer association,  $Y = 1$ ; and (2) do not participate in a farmer association,  $Y = 0$ . We state that membership is conditioned on a set of independent variables. The analysis includes three cases: one for the total sample and two cases comparing samples according to the gender of the small farmer. The empirical model estimates the following participation equation:

$$Y^* = X\beta + v$$

$$Y = \begin{cases} 1 & \text{if } Y^* = 1 \\ 0 & \text{if } Y^* = 0 \end{cases}$$

where  $Y$  represents the dependent variable of participation in a farmer association and  $X$  represents the independent variables grouped into four categories: socio-economic (sex, age, age squared, literacy, language spoken, and education level), household (size,

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<sup>4</sup> For the econometric analysis, provinces where all farmers do not belong to an association were dropped to avoid predicting failure perfectly since we are controlling by provinces for fixed effects. However, we are keeping provinces where there are associated and unassociated potato farmers.

presence of women and men 65 or older, and 6 or younger, presence of a partner, and household assets), land (size, title, and form of acquisition via inheritance and/or land markets), and geographic (live in the district's capital and altitude of district).

The variables included in the socio-economic category (sex, age, age squared, literacy, language spoken, and education level) represent some of the individual characteristics of potato small farmers captured in the CENAGRO database. The variable age may reflect the experience and productivity of the farmer (Tauer 1995, Fan and Salas Garcia 2018), which may have a non-linear relationship with farmer's participation which is the reason to include a square term for age. The ability to speak Spanish (in addition to an indigenous language, e.g. Quechua or Aymara) may influence membership status. The examination of levels of education (no level, primary, secondary and post-secondary) is important given that rural families often make decisions or prioritize the educational opportunities of their male and female offspring according to traditional gender practices – with men are often assumed to be the main breadwinners while women are assumed to be caregivers and homemakers (Mudege et al. 2015, Kang 2010) that may influence the membership status of potato women and men small farmers.

The household variables (household assets, size and composition) collect information that may point to time and financial constraints, available family support as well as responsibilities that may influence small farmer membership status. To some extent, household assets such as the presence of sanitation within the household, computers and internet access reflect the economic condition of small farmers (Escobal, Saavedra, and Torero 1999), and may indicate whether there are economic intra-group and cross-group differences and whether particular time and financial constraints are associated with membership status according to gender. For household size and composition, we include

the number of family members and the dichotomous variables indicating the presence of female and male members who are 65 or older and those who are 6 or younger as well as the presence of a partner in the household. Younger and older family members may pose financial and time constraints to farmers' participation in activities outside the household, but they may also serve to support the daily activities of farmers by providing assistance with domestic work, childcare and agricultural activities among others.

Household size and composition shed light on the constraints faced by women farmers as gender practices are traditionally associated with household responsibilities including taking care of children and elderly family members (Fortmann, 2009; Ministerio de mujer y poblaciones vulnerables, 2012). Similarly, for men household size and composition can signal responsibilities as well as privileges associated with men's gender practices as breadwinners. Household size and composition, therefore can be associated with membership status given the constraints, reproductive needs and the support system available to small farmers according to binary gendered practices (i.e. mothers and homemakers, fathers and breadwinners). It is also possible that larger families may require more income, which could incentivize collectivization. We also include whether there is a partner present in the household since this may have an effect on the constraints as well as the support system available for farmers to participate in associations.

When examining land variables, we include four variables farmland size in hectares, percentage of hectares with title, percentage of parcels acquired by inheritance, and percentage of parcels acquired via land markets. Land titling and forms of land ownership have also been associated with gender inequality (Deere and León 2003). We use percentage of hectares with title as well as forms of acquisition here because in rural areas, women often face barriers obtaining land titles in their own names (Fortmann 2009,

Ministerio de mujer y poblaciones vulnerables 2012) making it more difficult for women to participate in farmer organizations, whereas this might not be the case for men. Also, some farmer organizations have land size requirements, which might negatively affect those who do not reach the threshold. On the other hand, examining forms of land acquisition (i.e. inheritance and land markets) may point to gender-based inequality affecting farmers' membership status.

Finally, regarding geographic variables, we include living in the district's capital, which to some extent reflects cost of mobility of some potato small farmers compared to those residing farther (Escobal and Cavero 2012, Mudege et al. 2015). We use live in the district's capital instead in a metropolitan center because some small farmers are likely to first travel to the district's capital to conduct most of their administrative tasks and procedures including registering land purchases and sales, accessing ownership records and land titling, rather than travel farther away to conduct their administrative business. Altitude of the district is also included in the geographic group to control for climate heterogeneity which may affect the types of crops produced.

#### **4. Results**

The descriptive analysis shows that among the 1,199 districts in the study, 220 districts lack the presence of women potato small farmers who are associated as compared to men (See Figure 1). These districts are located in 17 out of 25 departments including Paucar in Pasco, Muqui in Junin, Huancarani in Cusco, Curpahuasi in Apurimac, Huancaya in Lima. For the 220 districts, the results show a higher percentage of women potato farmers who are single, less educated, with smaller land plots as well as a smaller

percentage of women who acquired land via markets, and a smaller percentage of women living in households with computers in comparison to women living in the remaining 979 districts. The results show that only 21 districts in the sample have a higher percentage of associated women potato small farmers compared to zero percent of associated men. These districts are located in 11 departments including Amashca in Ancash, Llacanora in Cajamarca, Aco in Junin, Oxapampa in Pasco, Pisacoma in Puno. However, there is no significant statistical difference among men farmers living in these 21 districts in comparison to men in the remaining districts.

[Figure 1 here]

Based on our calculations of the socio-demographic variables (see Table 2), the results show that while 49 years old is the average age for the whole sample, overall there is a higher proportion of slightly younger men small farmers in comparison to women small farmers. Within the sample according to membership status, we find that associated farmers tend to be older than those who are not associated regardless of gender. The average age for associated women is around 52 while for unassociated women is 50. Similarly, for associated men, the average age is around 51 and for unassociated men is 49. By looking into age groups, the data show that among unassociated small farmers there is a higher percentage who are 30 or younger regardless their sex whereas among associated small farmers there is a higher percentage who are 50 or older.

Also, for the whole sample, there is a higher percentage of men farmers (89%) who are literate in comparison to women farmers (67%) regardless of their membership status. The data also show a slightly larger percentage of associated small farmers (85%) who are

literate in comparison to those who are not associated (81%) regardless of gender. When conducting intra-group comparisons, we find that there is a higher percentage of associated men (91%) who are literate compared to unassociated men (88%). Higher levels of literacy are also reflected when comparing associated women (72%) to unassociated women (66%). When we examine language spoken, the results show that there is a higher percentage of associated farmers (44%) who speak Spanish in comparison to unassociated farmers (42%). This gap increases when we compare associated women (46%) with unassociated women (40%) but decreases between associated men (44%) and unassociated men (43%).

When accounting for levels of education, the data show that less than 10% of farmers in the sample hold a post-secondary degree regardless of gender or whether they belong to a farmer association. When comparing associated women and men, we find a larger percentage of men with higher education (36% have secondary or higher education) levels than women (25%). An intra-group comparison of women indicates that those who belong to an association are more educated (71% have primary or higher education levels) than women who are not associated (64%). In the same fashion, associated men are more educated (91% have primary or higher education levels) than those who are not associated (88%). In all, the results indicate a higher proportion of associated farmers with higher education levels in comparison to women and men who are unassociated.

[Table 2 here]

For household size and composition, we include the number of family members and the dichotomous variables indicating the presence of female and male members who are 65 or older and those who are 6 or younger as well as the presence of a partner in the



household (See Table 2). Our results show that a higher percentage of associated farmers live in larger households in comparison to households with unassociated farmers, regardless of gender. There is also a higher percentage of households (21%) where the small farmer is male and lives with at least one elder male member who is 65 or older in comparison with households where a female farmer lives with at least one elder male member (7%). Instead, a higher percentage of households (25%) where the small farmer is female has the presence of at least one elder female member who is 65 or older in comparison to households with a male small farmer in the same condition (13%).

The results also show a higher percentage of households with associated farmers living with at least one elder family member in comparison to unassociated farmers regardless of gender; there is only a slight difference when we observe the percentage of small farmers living with at least one younger family member who is 6 or younger. We found that 9% of associated women live at least with one elder male and 28% live at least with one elder female whereas for unassociated women these percentages decrease to 7% and 25%, respectively. Similarly, the results show that there is a higher percentage of associated men living with at least one elder male (22%) and one elder female (15%) in comparison to unassociated men. Also, a higher percentage of households where the small farmer is male has the presence of a partner (80%) in comparison to those households with a female farmer (42%), regardless of membership status. In addition, a higher percentage of households where the farmer belongs to an association has the presence of a partner (71%) in comparison to those households with unassociated farmers (67%). To observe household wealth, we use assets held by the household such as sanitation, computer, and internet. Although there is a small percentage of households holding those assets, the data show that

a higher proportion of households with associated small farmers have these assets regardless of gender.

In the case of land variables, we observe that the average farm size for men is 1.22 hectares and for women is 0.88 hectares. Our results show that associated small farmers own slightly larger farms (1.16 hectares) than unassociated (1.10 hectares), regardless of gender. We also find that associated women hold the highest percentage of land titles (33%) compared to unassociated women (31%) and to associated men (27%) and unassociated men (25%). For form of land acquisition, the data indicate that unassociated farmers acquired a higher percentage of land via inheritance in comparison to associated farmers, regardless of gender. Unassociated women acquired a higher percentage (58%) of parcels via inheritance in comparison to associated women (51%), associated men (42%), and unassociated men (50%). Meanwhile, there is almost no difference between associated and unassociated farmers in the acquisition via land markets.

Finally, to complete the analysis we present the results of the Probit model of membership status. Table 3 shows the results for the total sample and the sample divided by sex. The econometric analysis show that all the socio-economic variables are significant and similar in magnitude and sign regardless of gender. The sex of the small farmer is not statistically significant in the total sample which suggests that being male does not affect membership status, however, when we divided the sample by sex, we found some relevant differences. The results show that there exists a non-linear relationship between age and participation in an association for men and women small farmers. The results also show that men and women small farmers who are literate and speak Spanish are more likely to participate in an association. In the case of education level, we observe that farmers with more years of education are more likely to belong to an association. Men with primary or

higher education levels are more likely to participate in an association whereas for women having a primary level is not significant.

[Table 3 here]

For household variables, the results show that farmers living in larger households are more likely to participate in an association regardless of gender; however, there are some important differences when we observe household composition. In the total sample, the presence of elders in the household has a positive effect in the probability to belong to an association but only if the elder member is female but this positive effect is only significant for male farmers. The presence of male or female elder family members has a positive impact in the membership status of male small farmer. However, in the case of women small farmers, the presence of elder family members has no effect in the membership status of women. On the other hand, the presence of female members who are 6 or younger has a negative effect in the total sample but when we divide the sample by sex this negative effect only persists for women small farmers. The presence of the partner is significant in the whole sample but when we divided the sample by sex, we observe that the presence of the partner is only significant for men.

Finally, the household assets, land, and geographic variables have similar effects on membership status of small farmers regardless of gender. Those small farmers who have access to sanitation, computer and internet within their homes are more likely to be associated. Also, having access to farmland has a positive impact on membership status. Those small farmers with larger hectares of farmland are more likely to belong to an association. Similarly, small farmers who have a higher percentage of hectares with title,

who acquired land by inheritance and via land markets are more likely to belong to an association. Instead, small farmers who do not live in the district's capital and live in districts with higher altitude are less likely to belong to an association.

## **5. Findings and Analysis**

In this article, we use data from the Peruvian 2012 IV National Agricultural Census and conduct cross-group and intra-group comparisons to examine the social markers influencing the membership status of potato small farmers in the Peruvian highlands. Of the total sample, we find that although women comprise less than half of potato small farmers, they are nearly equally represented vis-à-vis men as members of farmer associations. Given that men comprise the largest proportion of potato farmers overall, it would be expected that they account for a majority of associated farmers, and yet they are nearly equally represented in farmer associations. This suggests that as a whole the incorporation of women potato farmers into farmer associations is comparatively better than that of men. With respect to land titles, we find that associated women hold the highest percentage of land titles compared to associated men and unassociated women and that unassociated men hold the lowest percentage of land titles. Associated women farmer's prevalence in holding land titles as compared to associated men and their unassociated counterparts, not only points to the importance of owning land to their membership status but may help explain the nearly equal proportion of participation of women in associations as men. This finding highlights the importance of land titling for women's current and future membership status while signaling land titling as a possible barrier to entry for unassociated men potato small farmers.

In Latin America, land ownership has been associated with the gender asset gap at the national level, which is also the case for Peruvian potato farmers. Nevertheless, at the regional level, we find variation in the magnitude of the asset gap, and at the district level, we find that forms of land acquisition by women and men potato farmers are more mixed and not always associated with gender (See Table 1). For potato farmers, in particular, our analysis indicates that inheritance is the main means of land acquisition for both women and men unassociated potato farmers and that there is almost no difference between land acquisition via markets between women and men. Also, our analysis suggests that although the gender asset gap in land ownership between women and men persists at the national level, there is regional and district-level variation in ownership patterns and the gender asset gap that may influence the membership status of women but also of men. Therefore, for gender asset gap analyses to more fully capture dynamic and contextual gender relations and bias, it is necessary to extend the analysis to regional and local geographies and scales of governance to more fully capture intra-group and cross-group variation.

While the overall incorporation of women potato small farmers into farmer organizations is nearly equal to that of men, we find that the membership status of women is unevenly spread geographically, with many districts without the presence of associated women in comparison to their male counterparts, and fewer districts without associated men (See Figure 1). Our intra-group analysis indicates that in the districts without associated women farmers, women potato farmers tend to be single, less educated and have smaller plots than women living in the remaining districts in the sample. Cross-group comparisons show that these social markers do not make a difference for their male counterparts in districts without associated male farmers. Here, our analysis points to the social markers that differentiate women as well as persistent gender-based inequality at the

district level given that these social markers do not affect unassociated potato farmers men in the same way that they do their women counterparts. This suggests that there may be district-level institutional gaps and biases that preclude women from accessing the resources necessary to join farmer organizations. Alternatively, district-level exclusion of women from farmers' organizations may point to local requirements and constraints by farmer organizations that deter women from joining, both instances which may require targeted policy interventions.

At the district level, when comparing associated and unassociated women, our findings indicates that some groups of women are disadvantaged on the basis of a combination of social markers –education, economic and domestic partnership and land ownership in comparison to other women. Social differentiation among women suggests that although as a group women potato farmers experience gender-based inequality vis-à-vis their male counterparts in particular districts, associated and unassociated women are a heterogeneous group, with some women rendered more disadvantaged than others. For the fewer number of districts without associated men potato farmers, we find no statistical difference between them and other male potato farmers living in districts with the presence of associated men. For districts without associated women and men farmers, it is possible that local institutional and social norms and practices may account for lack of participation, however, given the limitations of the data used here, further research is necessary to pinpoint the possible causes.

For household size and composition, we found that while associated farmers live in larger households, women farmers' households are more 'feminized' in their composition as compared to men regardless of membership status. This is particularly in relation to the presence of a partner –with 80% of men farmers having a partner as opposed to only 42%

of women, and nearly double the number of elderly females and a third of elderly males living with women farmers in comparison to men. The feminized household composition of unassociated women farmers closely mirrors that of associated women, whereas the household of unassociated men mirrors that of associated men. Men's households have a larger percentage of elderly men than elderly women living in the household but a less skewed elderly male to female proportion. As such, men potato farmer households are mostly comprised of intergenerational nuclear families whereas women farmer households are predominantly populated by women. This pattern may be due to the life expectancy of elderly male farmers together with elderly women's preference to live with their daughters rather than their sons, however, this explanation would require further research.

Our analysis indicates that the presence of a partner in the home is only significant for the membership status of men and not that of women. One possible explanation is that as partners, women's labor in the home may serve to subsidize men's associational activities whereas for women farmers the presence of a partner may not necessarily represent additional support. This suggests that gender practices associated with caregiving and household work continue to bind women as partners and that for women farmers being partnered does not aid their associational pursuits, whereas men do not experience such limitations.

For the presence of elders in the home, our findings indicate that the likelihood of belonging to a farmer association increases only for men when there are elderly family members in the household whereas for women there is no effect. In particular, the larger proportion of elderly men in male farmers' households may serve to provide the agricultural labor necessary to support the associational activities of younger male breadwinner farmers pointing to the coexistence of multiple masculinities in the household.

This suggests that the plurality of gender practices associated with masculinity and their gendered role as breadwinners enables male farmers to harness the resources of elderly household members to support their associational status whereas this is not the case for women. As such, for women the role of breadwinner carries the responsibilities but not necessarily the privileges of commanding household resources as compared to men. Our analysis suggests that the stratifying mechanism of ‘breadwinner’ lends men a hegemonic position within the household manifested in the ability to harness household labor from partners and elderly family members and reproducing their power and privilege within the gender order of the household. With respect to children, we found that the presence of girls 6 and under, and not boys, has a negative effect on membership status only for women when compared to men. One possible explanation for this difference is that there may be contextual specificities, cultural norms, practices or perceptions associated with parental care or oversight for girls and boys. However, further research is necessary to tease out perceptions and household gendered practices related to the upbringing of girls and boys.

Based on the analysis of individual socio-demographic characteristics related to membership status including, levels of education, literacy and language spoken, we find that associated farmers regardless of gender have higher levels of education and literacy than their unassociated counterparts. Cross-group comparisons, however, show that associated men farmers have higher levels of education and literacy than that of associated and unassociated women potato farmers. Intra-group comparisons show that associated men and women farmers have higher education and literacy levels compared to their unassociated counterparts (See Table 2). We also find that for women, it is more important to have higher levels of education than men in order to participate in farmer organizations. That is, men with primary or higher education levels are more likely to participate in an



association whereas for women having a primary level of education is not significant. This finding suggests that for women is not enough having primary studies to participate in a farmer association. This is despite the fact that intra-group comparisons show that lower levels of education and literacy also affect unassociated men. In all, cross-group comparisons show that gender-based inequality between men and women on the basis of education are accentuated when it comes to membership status. Therefore, to increase women's participation in farmer organizations, programs encouraging women to attain higher education levels or interventions to deter gender bias toward less educated women in membership status will need to be implemented.

For language spoken, we find that overall farmers who speak Spanish are more likely to belong to an association. However, intra-group comparisons show that differences based on language increase between associated and unassociated women but yet decrease for their male counterparts. This suggests that the ability to speak Spanish is a marker of social differentiation especially among associated and unassociated women farmers, and that gender-based inequalities between women and men in education and literacy persist. From a policy perspective, this suggests the need to increase the opportunities for less educated and literate women and to foster language diversity in farmer associations. Together, our findings and analysis point to cross-group and intra-group differences across our variables reflecting persistent gender-based inequality but also social differentiation among women and men potato farmers.

## **6. Conclusion**

In recent years, policymakers have advocated for the collective organization of small farmers to help the small farming sector face the challenges related to production constraints, increased buyer leverage, and limited state support. Membership in farmer organizations has been identified as an important tool to overcome these challenges especially for target populations categorized by policy makers as ‘women’ and ‘marginalized’ small farmers. However, for agricultural policy to be effective, it is important to recognize that these are not homogenous populations but that they are differentiated across a variety of stratifying social markers reflecting the heterogeneity of the small farming sector. Here, we suggest that for agricultural policy to be effective, it is important to unpack the differences obscured by the use of homogenizing analytical categories so that gender-based as well as other forms of social inequality can be identified. Similarly, we suggest that analytically equating gender to the examination of how women fare as opposed to men veils social difference among women and among men and does not reflect the relational aspects associated with the social construct of gender. Based on district-level and sex disaggregated data from the Peruvian 2012 IV National Agricultural Census, we conduct intra-group and cross-group comparisons of potato small farmers to discern markers of social differentiation that may influence membership status. Through the application of a methodological approach that considers not only cross-group but intra-group comparisons we endeavor to de-homogenize the analytical categories of ‘women’ and ‘marginalized’ farmers, highlight the relational aspects of gender analysis and reflect the diversity of the small farming sector.

Our analysis indicates that overall men’s membership in farmer associations is lagging behind that of women and that they hold the lowest percentage of land titles compared to their women counterparts –who hold the highest of all groups. From a policy

perspective, this suggests that land titling is an important area of intervention as it influences not only the membership status of some women but that of some men as well. Our analysis shows gender-based spatial inequality in membership status at the district level and social differentiation among women in districts without associated women. Here, we highlight the importance of targeted district-level policy interventions to eliminate local institutional bias against women potato farmers in general and less educated, un-partnered and asset poor women in particular, and to oversee organizational the constraints and membership requirements that might prevent women from joining in these particular districts. Our analysis also shows that the ability to speak Spanish is a marker of social differentiation especially among women farmers, and that gender-based inequalities between women and men as related to education and literacy remain. This suggests the need to increase the opportunities for less educated and literate women to join and to foster language diversity in farmer associations.

Our analysis of household composition shows that women potato farmer households are more feminized due to the absence of male partners and the higher proportion of elderly women and lower proportion of elderly men living in women's households as compared to men's. Yet, in contrast to men, the presence of a partner and/or of elderly persons in the home does not influence women's membership status. To understand why this might be the case, we suggest that plural masculinities and the stratifying gendered practice of breadwinner enable men farmers to harness the support of elderly male household members and their female partners whereas that is not the case for women. What requires further research, however, is the question of how despite a feminized household composition and inability to harness household resources, women leverage the division of labor at the household level so they can sustain their productive and associational activities. Finally, to

understand why the presence of girls under the age of six has a negative effect only on the membership status of women farmers, it is necessary to conduct further studies to shed light on the contextual specificities, cultural norms or practices as well as household decision-making processes related to the upbringing of girls and boys. In this article, we endeavored to couple the scholarly focus on gender-based inequality with the relational and analytical consideration of masculinities and gender order stratifying mechanisms to tease out gender difference and farmer heterogeneity. In all, our analysis points to the social markers that differentiate Peruvian potato small farmers while de-homogenizing analytical categories that subsume various forms of social inequality including, but not limited to gender.

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