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Gendered opportunities and challenges to innovation in forage production in Afghanistan

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Cover page photo: This paper evidences that gendered norms, roles and responsibilities shape social relations and interactions between different stakeholders in forage production systems in rural Afghanistan. As a result, gender social relations present challenges, as well as opportunities, for women farmers to acquire, apply and benefit from new technologies and knowledge for enhanced forage production. Photo of Lana (left) and Nadia participating in a training on propagating and germinating forage seeds in Amman, Jordan. Photo by Yngve Bråten.

Summary

This working paper discusses the interface between gender and agricultural innovation systems. More specifically, the working paper investigates how gender norms and roles influence social relations between actors in forage innovation systems in rural Afghanistan. In this regard, the paper firstly explores how gender roles and norms shape the relationships and interactions between different farmers, as well as between farmers and other actors in selected forage innovation systems. Secondly, the paper highlights how gender relations shape women and men farmers' opportunities to learn about and adopt agricultural innovations in rural Afghanistan.

Findings presented draw on a study analysing gendered barriers and opportunities for innovation in the forage system in the three Afghan provinces of Baghlan, Bamyán and Nangarhar (see Box 2). In particular, the working paper is embedded in solicited diaries written by five women that are all active players in their respective forage innovation systems.

The paper is based on the premise that agricultural innovation processes arise from, and are entrenched in, the interplay and relations between diverse actors and their social and physical environments. The paper evidences the gendered nature of agricultural innovation systems, and how social relations influence the development, diffusion and use of agricultural innovations. Examples are given of how gender norms and roles shape (and are shaped by) social relations and the interplay between actors in the forage innovation system in Baghlan, Nangarhar and Bamyán. Specifically, qualitative data collected through research diaries highlight ways gender roles and norms can produce and reinforce unequal social relations that mediate women and men's barriers and opportunities to engage with, and benefit from, innovation processes in the forage system.

Introduction

Agriculture plays a significant role in Afghanistan where an estimated eight million farm households rely on crop-livestock production systems for food, income, and as a 'safety-net' in times of need. However, agricultural and livestock production practices and farm management systems in rural Afghanistan remains sub-optimal. As a result, many small-scale farmers in rural Afghanistan face the constraint of an insufficient feed base to effectively support their livestock populations (IBSR, 2015, Boros and McLeod, 2015). Shortages of forage in Afghanistan, especially during winter, limit animal productivity, increase food insecurity and put households at economic risk as they may be forced to sell off or slaughter part of their livestock. Given the importance of livestock for rural livelihoods, inadequate access to new innovations that can increase the production of, and safely store, forage continues to be of major concern amongst smallholder farmers.

That said, different groups of women and men farmers face different forage feed gaps, and experience different forage innovation needs. For example, several studies emphasize that although women play important roles in agriculture in Afghanistan, differences in what's considered appropriate gender roles and attributes often leave women farmers with limited access to and ownership over agricultural resources (see for example Tavva et al., 2013 and Grace, 2005). Indeed, despite the fact that Afghan women are often greatly involved in livestock rearing, few are allowed to own land or livestock, and when they sometimes do they still lack control over it. Moreover, women farmers face specific constraints in terms of accessing agricultural innovations, information and knowledge, and linking with service providers/extension agents. As a result, different groups of women farmers face specific constraints related to forage production and other farm activities compared to their male counterparts.

Agricultural innovation systems

Agricultural development is often labelled as a pathway for eradicating hunger, malnutrition and poverty (e.g. FAO, 2014; IFAD, 2010). Yet, farmers and farming practices around the globe are increasingly

Photo by Lana



Many farmers in rural Afghanistan face the constraint of an insufficient feed base to effectively support their livestock populations. Shortages of forage in Afghanistan limit animal production and put households at economic risk, particularly during the country's harsh winters. Photo of a village in Baghlan province.

challenged by drivers such as climate change, globalization, shifting market demands, changing livelihood expectations and political disarray (FAO, 2014). This also holds true for rural smallholder farmers in Afghanistan who have, for example, struggled to sustain and/or increase their agricultural productivity during years of civil war and in the face of weak agricultural institutions. As a result, the problems farmers face, both globally and in Afghanistan, are increasingly complex, in the sense that these problems

- have multiple dimensions (biophysical, technological, economic, institutional, political, socio-cultural);
- are embedded in interactions across different levels (e.g. individual, organizational and institutional), and;
- in which a multiplicity of actors (often with different interests and perspectives) are involved (Schut, 2015).

As a consequence, farmers continuously need innovate and adapt to remain productive and competitive, and to ensure their food security and income. In Afghanistan in particular, agricultural innovation is seen as a paramount driver in closing the forage feed gap (ACIAR, 2019).

The realization that farmers operate in complex, dynamic and uncertain settings has shifted the perspectives on how innovation and agricultural development take place. As a result, a *system perspective* on agricultural development has become increasingly popular (Hermans et al., 2013). The AIS framework recognizes that innovations emerge from

learning that takes place in systems of actors (see Box 1). These systems are again embedded in formal and informal institutional contexts determining how the system actors behave and interact (Hall et al., 2003: pp213).

Innovation processes arise from the interplay between diverse actors and their social and physical environment, both of which influence the development, diffusion and use of innovations (Sarapura, 2009). As a result, the AIS perspective places great emphasis on understanding the nature of relationships between actors in innovation systems, and the attitudes and practices that shape those relationships. Building on this discussion, this working paper considers innovation systems as systems of social relations. Following Kabeer (2000), social relations can be understood as relations of power that create and reproduce systemic differences in the positioning of different groups of people in a given innovation system. As such, social relations can produce cross-cutting inequalities, which ascribe each individual a position in a given innovation system, as well as their rights, access to and control over resources, roles and responsibilities therein. Gender relations are one type of social relations. Others include those of race, religious beliefs, ethnicity, etc. For the purpose of this paper, gender refers to the socially constructed roles, behaviours,

activities, and attributes a society (at a given time) assign men and women in a given agricultural innovation systems (UN Women, n.d.). Gender relations, as such, is defined as “the specific subset of social relations uniting men and women as social groups in a particular community, including how power and access to and control over resources are distributed between the sexes (UN Women, n.d.).

Background and aim

The scope of this paper is limited to investigating gender in innovation spaces (see Box 1). As such, the working paper does not investigate the full extent of how gender relations influence the entire network of organizations, enterprises, social institutions, and individuals focused on bringing about change (or innovation) in the selected forage innovation system in Baghlan, Bamyán and Nangarhar.

Within this context, the paper explores:

- a** how gender roles and norms shape the relationships and interactions between different farmers, as well as between farmers and other actors in selected innovation spaces in the forage innovation system, and;
- b** how gender relations shape women and men’s opportunities to learn about and adopt agricultural innovations in selected innovation spaces.

Box 1 | Definitions

Agricultural Innovation System: network of organizations, enterprises, and individuals focused on bringing new products, new processes, and new forms of organization into economic use, together with the institutions and policies that affect their behaviour and performance (FAO working definition, Hall et al., 2006).

Innovation process: the process of generating and successfully putting into use new ideas, knowledge, technologies, organizational or institutional arrangements. Innovation as an interactive learning process requires the integration of ideas, knowledge, experience and creativity from multiple actors through networking, linkage creation and partnerships (Leeuwis, 2004).

Innovation space (or “niche”): a sub-system to the agricultural innovation system where individuals and organizations experiment with, adapt, apply and finally put into use new ways of doing things, focused on bringing about change (“innovation”) related to one or more specific activity in the forage value chain. Innovation spaces are related to one or more specific activity(ies) in the system. Activities in innovation spaces might be orchestrated, facilitated, or more autonomous and spontaneous based on needs. The concept of innovation space is inspired by the concept of niches (see Sarapura and Puskur, 2014). Like innovation systems, innovation spaces are gendered. Gender roles and norms influence the relationship between actors in the innovation space. Hence, gender norms and roles shape women and men’s ability to purposefully access, be part of, and benefit from processes and outcomes of innovation spaces.



From left to right: Najia, Lana, Rahila, Nadia, Bomani and Bradley (Murdoch University) during a workshop on plant propagation, nursery management, pasture production and enterprise development in Amman, Jordan. The workshop was organized as part of the “Forage options for smallholder livestock in water-scarce environments of Afghanistan” project.

The paper draws on a study conducted by KIT Royal Tropical Institute in collaboration with the International Center for Agriculture Research in the Dry Areas (ICARDA). The study took place in 2017 and 2018 and investigated gendered barriers and opportunities for innovation in the forage system in the three Afghan provinces of Baghlan, Bamyán and Nangarhar (Box 2). The study was part of the larger “Forage options for smallholder livestock in water-scarce environments of Afghanistan” project. The aim of the project was to improve the livelihoods of smallholder live-

stock farmers in the mixed crop-livestock areas of Afghanistan that have limited access to water. In particular, the project aimed to increase the availability of feed resources by providing seeds of improved forage varieties and developing technical options for better integration and management of forage legumes in current cropping systems. The project partnership was made up of ICARDA, CSIRO, Murdoch University, and several research agencies from Afghanistan (including Agriculture Research Institute of Afghanistan, and Ministry of Agriculture, Irrigation and Livestock).

Box 2 | KIT-ICARDA research on gender in forage innovation systems in Afghanistan

The study used a mixed method approach, combining literature review with qualitative and quantitative methods. Primary data were collected in 4 villages in the Baghlan and Nangarhar provinces. A household survey was conducted among 70 households. In addition, 13 Focus Group Discussions (FGDs) and one workshop were conducted. Finally, five women directly engaged in the Baghlan and Bamyán forage innovation systems shared their own personal reflections and experiences on different ways gender interact with innovation processes in agriculture in their own villages through solicited diaries. The villages and survey respondents were all targeted by the “Forage options for smallholder livestock in water-scarce environments of Afghanistan” project.

Further, this paper builds on the lived experiences and insights of five women Afghan involved in different capacities in the forage systems in Baghlan and Bamyan. As part of the KIT study, the women shared their own experiences and personal reflections on different ways gender influences and interacts with innovation processes in agriculture in their own villages. These experiences and reflections were shared through solicited diaries. It should be stressed that the women are differently placed in the forage innovation systems in Baghlan and Bamyan. Indeed, the five women writing the diaries differ in terms of age, marital status, occupation etc. (see Box 3). The paper intends to the greatest extent possible to capture this diversity. Each woman wrote a total of nine diary entries over a period of eight months. The diaries gave insight into sensitive, stigmatized and “hidden issues” on gender and agricultural innovation that are not easily accessible using the surveys and Focus Group Discussions (FGD). The solicited diaries were combined with follow-up interviews and one FGD with the five women upon the completion of the last research diary. During the interviews and the FDGs, the content of the diaries was discussed and validated, lessons learned and experiences were shared.



Photo by Yngve Bråten

Over a period of eight months, Rahila (left) and Najia (middle) shared their personal experiences and reflections on different ways gender influences and interacts with innovation processes in agriculture in their own villages through solicited diaries.

Box 3 | Solicited diaries

Nadia (24): Nadia worked as a gender knowledge facilitator for ICARDA in Baghlan from 2016 to 2018. Nadia graduated from Baghlan University’s agricultural faculty in 2016. Nadia is from Baghlan. Currently Nadia is living and working in Kabul with her parents and siblings.

Lana (27): Lana is working for Aga Khan Foundation Afghanistan’s (AKFA) agricultural department as a Regional Officer AFS (Agriculture and Food Security). Lana has a passion for working alongside women farmers and helping women adopt new agricultural practices. Lana is living and working in Baghlan.

Bomani (28): Bomani is working as a Regional Officer AFS (agriculture and Food security) officer with Aga Khan Foundation-Afghanistan. At AKFA, Bomani provides technical support to AKFA field teams on project implementation, data management and project monitoring. Bomani also works on forage and feeder production as well as conducting Farmer Field Schools on various topics for smallholder farmers. Bomani lives and works in Bamyan province.

Najia (32): Najia owns a business tailoring women’s clothes and selling handicraft. Najia used to be a farmer but stopped farming because of security issues in Baghlan. Najia is however still a member of Baghlan’s farmers cooperatives. Najia graduated from Baghlan University Faculty of Education in 2015. Najia lives and works in Baghlan province.

Rahila (49): Rahila is a farmer in Baghlan province. Rahila, working alongside with her husband, who is an agricultural worker, supports a family of 9 members. Rahila carries out both farm work and house work. All of Rhaila’s family members are involved in farm work. Rahila is also a regional trainer for GIZ, working specifically on the financial inclusion of women farmers.

Zooming in on gender norms and roles

Gender norms of seclusion

A number of studies on agricultural innovation evidence that social relations between agricultural actors are mutually and iteratively shaped by gender norms (see for example Aregu et al., 2018). Gender norms can be understood as ideas and expectations about how women and men should look, be and act. As such, gender norms are standards and “unwritten rules” to which men and women (and intersex) generally conform or are expected to conform.

It is evident from the diaries that several gender norms are produced and reinforced in the forage systems in Baghlan, Bamyan and Nangarhar. For instance, in their diaries, the women explain that the gender norm of seclusion is effectively limiting some women farmers’ physical mobility. With limited physical mobility, women farmers are often prevented from engaging in a number of productive activities in the forage system that are located outside of their household. As stated by Lana “men can cultivate land further from the village than women, women can only work close to their village. Some men do not allow women to work outside of their homes”. Najia explains that “a man can irrigate his farm at night or sleep in his field, but a woman does not do that because of cultural norms”.

The gender norm of seclusion is also evident in the wider study. For example, 50% of male survey respondents fully agree with the statement that “women should stay in the home to take care of household duties while men take care of the hard work in the field” (source: survey). Interestingly, however, only 13% of female survey respondents agreed with the statement. As such, it seems that the level

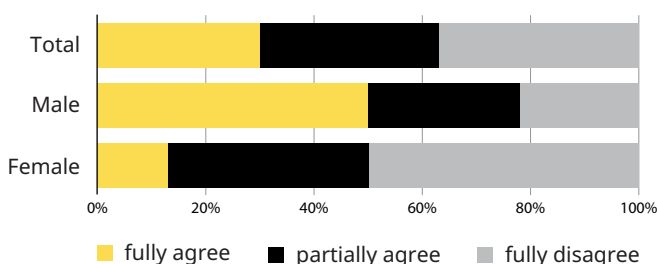


Figure 1: Respondents’ agreement with statement that “women should stay at home to take care of household duties while men take care of the hard work in the fields”

of acceptance of the gender norms of seclusion differs between the genders.

Preventing some groups of women to access certain public and private spaces in the forage system, the norm of seclusion hinders women from engaging with agricultural innovations, as well as preventing women from obtaining knowledge about these innovations. Indeed, the study confirms that male household members usually are the first ones to try new agricultural innovations, as these innovations are often found in public spaces, to which women have limited access (source: survey and focus group discussions).

There are important variations in the force, interpretation and salience of gender norms across the different forage systems in Baghlan, Nangarhar and Bamyan. For example, Nadia explains that the gender norm of seclusion in Baghlan is less “strict” compared to the same norm in Nangarhar, where women in general have lesser access to public spaces and productive activities outside of their households. Moreover, gender norms embrace individuals differently based on their social identities “beyond gender”. As such, unwritten rules about women’s involvement in innovation processes might apply differently to young unmarried women as they do to older married women with children. Rahila, an older married woman, explains that she does not feel constricted by the norm of seclusion to the same extent as younger women in her village, and that she can go to the local market and other spaces to learn about new agricultural innovations if she so chooses.

Gender norms also prove to be dynamic and to change over time due to different factors. For example, all five women explain in their diaries that the gender norm of seclusion can become both more and less strict during periods of armed conflict. On the one hand, Lana states in her diary that “although war harms everyone, it affects women’s work more than that of men’s. During the conditions of war women’s activities on land is reduced in comparison to those of men”. On the other hand, due to women’s limited mobility, it is men that usually migrate from rural Afghan provinces during armed conflicts as a means

to financially support their families. As a result, women farmers are left with increased agricultural labour burdens. In cases where women are left with increased agricultural responsibilities, the gender norm of seclusion is softened as women have to enter “male dominated agricultural spaces” in order to sustain themselves and their families. *“When men migrate, women’s work hours double and their responsibilities both at home and on land increase”* (Bomani).

Gender norms of female-male interactions

Nadia, Najia, Lana, Bomani and Rahila all emphasize that gender norms about “appropriate” female-male interactions influence the extent to which women (and men) farmers are able to access and exchange information about agricultural innovations. More specifically, in their diaries, the women state that norms around the “appropriateness” of social interactions between actors in the forage system in Baghlan are shaped by

- a the gender of the people interacting
- b whether or not the people interacting are from the same family, and
- c whether or not social interactions between women and men are happening in public or private spaces.

Depending on how these three considerations of the “appropriateness” of social interactions intersect, women and men farmers in Baghlan might be given different opportunities to learn about and access agricultural innovations.

For example, Nadia and Lana state that gender norms about social interactions lead women farmers to access information about new forage storage methods and spaces mostly from female family members. Additionally, male-male interactions are more socially appropriate than female-male interactions (between non-relatives) in public spaces. Men therefore access information about new innovations from more diverse and formal sources than women, such as the community and extension workers. Indeed, the Ministry of Agriculture, Irrigation and Livestock is a preferred source of information for a quarter of male heads of household, against 0% of female heads of household. However, it should be stated that *neighbours* and *other farmers* are a preferred source of information about new and improved agricultural practices for the majority of male as well as female heads of household.

Moreover, women farmers trying new innovations (especially innovations related to poultry and kitchen gardening) only access information about the innovation at hand from their family members. Further, almost all women obtain information and knowledge on agricultural production from (mainly female) friends and neighbours, compared to 48% of men. Interestingly, for 24% of female heads of household compared to 7% of male heads of household, agricultural cooperatives are a preferred source of information (*source: survey*).

The study illustrates gendered patterns of knowledge exchange and interaction between farmers within the forage innovation system; women farmers often exchange information with female relatives, but they hardly exchange information with male farmers that they are not related to. Similarly the five women stress that it is easier for women farmers to share information on new forage varieties with other women compared to men. *“I always share my knowledge with the local women and farmers so they can utilize it as well”* (Rahila).

However, women farmers do exchange information on forage with male relatives. The majority of female heads of households frequently exchange information with male relatives, while 60% of male heads of household do not exchange information at all with female relatives. Rather, male heads of

Norms concerning women’s physical mobility and the appropriateness of female-male interactions impact on women’s abilities to access and benefit from innovations in forage production. Photo of Bomani.



Photo by Yngve Bråtten



“In the village where I work, women participate in the production and harvesting of forage, but it is only men that go to the market to sell forage. Men control all the income from the sales. Women do not control this money. Men spend the money on the household, but I think that the household would benefit even more if women could control some of the income. They would spend it on improved nutrition, their children and on education” – Rahila (in the photo).

household frequently share information with male relatives and other male farmers (source: survey). Rahila explains that men farmers in certain villages in Baghlan do not trust information given by other women. They might deem it necessary to validate information given by women that they are not related to with other male farmers. Rahila and Najia highlight that this “lack of trust” stems from perceptions about women’s lack of agricultural knowledge. *“Male farmers (cultivators) are persons who have relative knowledge and a lot of experience in the field of forage and its importance because these individuals have a lot of experience in the field of agriculture”* (Rahila). *“Women take care of the house chores and child raising activities while men are involved in the work outside the house to a greater extent than women. That is why men have more knowledge than women”* (Najia).

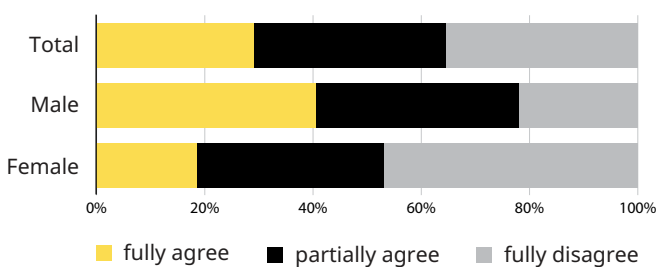


Figure 2: Respondents’ agreement with statement that “women have better knowledge on forage production compared to men”

Interestingly, the survey, to some extent, contradicts these statements: Forty one percent of male respondents, compared to only 18% of female respondents fully agree with the statement that “women have better knowledge on forage production compared to males”. As such, both norms about female-male interactions and perceptions about women’s agricultural knowledge are two examples of how gender shapes the relationship between actors in the forage innovation system in Baghlan and Nangarhar (see figure 2).

Gendered roles in agriculture and innovation needs/preferences

Gender roles, in the context of this paper, are the behaviours, tasks, and responsibilities that are considered appropriate for women and men, boys and girls and people of the third gender in a given society (UN Women e-learning).

All five women provide evidence for a nuanced gender division of labour in the forage value chain. The women all explain that men usually do the most “heavy work” on the farm, whilst women in general are responsible for forage grown in kitchen gardens, weeding, and milking/dairy processing (see table 1). However, the women emphasize that it is important to avoid stylized facts about the gendered division of labour in the forage system in Baghlan and Nangarhar. For example, Lana illustrates that women’s agricultural roles are not isolated from the roles of men:

“The responsibility of men famers and women farmers are sometimes the same, they work together on the farm. However, men farmers have to do the hard works like preparing lands for planting, irrigation and the responsibility of women farmers cutting, harvesting and storage of their productions”.

Moreover, Rahila and Najia write that women’s agricultural roles are sometimes dependent on her marital status:

“Women without husbands are obliged to bear doing all the farm work by themselves for the sake of their families and themselves’ survival. Women with husbands have much of this work done by their husbands. The wives help their husbands by being side-by-side with them”. (Rahila).

“Since women who don’t have husbands are responsible for earning a living for their families, they do more work than women who have husbands. For example, women who have husbands have their husbands helping them and have fewer responsibilities than do women without husbands. Their husbands also do the heavy work”. (Najia)

This nuanced picture of gender roles in the forage value chain in Baghlan and Nangarhar is reflected in the study.

Furthermore, the women explain that based on their (gender) roles in agriculture, men and women farmers might have different innovation needs and preferences. For example, women, to a much greater extent than men, express preferences for trying and adopting new types machinery that could help to increase their forage production. Women consider new machinery as the most important “improved forage practice” in Baghlan and Nangarhar. However, it is men that is found to be the ones first accessing and trying out new machinery (source: FGD). In addition, information about new types of machinery is usually found “in the community”, which is a space that women cannot always easily access. Additionally, in the workshop, men would explain that women

should not drive tractors as they are not physically capable of handling such a vehicle. The research diaries confirm the importance of modern machinery and the gendered dimension of access to it. Bomani states that “the main challenge for men and women farmers to increase their productivity is the lack of modern technology and machines” and Rahila states that “widowed women especially are ploughing the land with traditional equipment such as simple shovels”. Yet, it is not socially accepted in either Baghlan and Nangarhar for women to drive tractors: 22% of the male respondents and 32% of the women fully agree with the statement that “women should be allowed to drive tractors to prepare land for forage production” (source: survey) (figure 3).

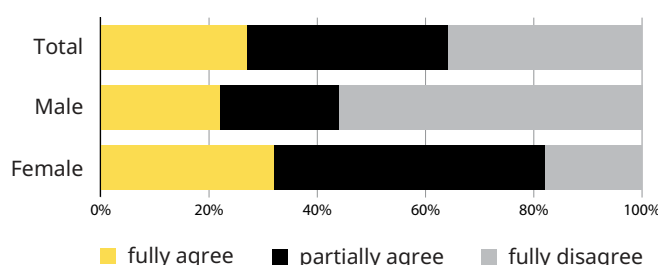


Figure 2: Respondents' agreement with statement that “women should be allowed to drive tractors, prepare land for forage production (including using fertilizer and pesticides) ”

Table 1 | Division in labour in the forage system in Baghlan

	Activity	Activity implemented by:					
		female		male and female		male	
Seed supply chain	Import						
	Problem analysis						
	Adoption tests						
	Release						
	Marketing and dissemination						
Production	Land preparation						
	Irrigation						
	Sowing / planting						
	Weeding / pest management						
	Harvesting						
Post-harvest	Cutting forage						
	Chopping/grinding /grading						
	Processing ¹						
	Storage						
Marketing/ use	Market analysis/selling						
	Grazing						
	Feeding (fresh products)						
	Feeding (dry / processed products)						

¹ Processing refers to urea treatment/mixing/cake/drying/silage making/packaging of forage

Conclusion and lessons learned

The working paper adds to the wider literature on gender and agricultural innovation, and emphasizes the gendered nature of innovation systems (see for example Ragasa, 2012 and Kingiri 2010). The paper evidences aspects of how gender norms and roles shape (and are shaped by) social relations between actors in the forage innovation system in Baghlan, Nangarhar and Bamyan. Specifically, the stories elicited from the diaries highlight ways gender roles and norms can produce and reproduce and reinforce unequal social relations that mediate women and men's barriers and opportunities to engage with, and benefit from, innovation processes in "innovation spaces" in the different forage systems studied. Four key lessons learned can be deduced from the findings presented in this paper.

"The innovator"

The working paper challenges conventional thinking about innovation that puts a sole focus on processes of innovation without considering the ways that the "innovator", as well as a product of an innovation, is shaped by gender relations, norms and roles. It is critical to understand how gender relations shape how and why actors in a given innovation space value and promote certain kinds of innovative activity and "innovators", while devaluing and even actively discouraging others. As explained by Hanson and Blake (2005, p. 686) "the social identities of innovators figure into the ways that institutions in particular contexts promote, value, and define innovations. Gender is therefore thoroughly implicated in the question of how and why certain geographic contexts encourage some kinds of innovations to emerge and develop while discouraging or preventing others". As such, women's innovation needs and preferences might contradict and challenge traditional gender norms and widely held notions (especially by men) about what types of behaviours, tasks, and responsibilities that are considered appropriate for women farmers. Women's innovation needs and preferences might therefore not materialize unless projects aimed at spurring agricultural development take these norms into account.

Intersectionality

It is evident that understanding gender roles in the forage value chain involves looking beyond a male-

female dichotomy. Indeed, such a dichotomy can wrongly portray women as a homogenous group in which all women face the same agricultural challenges and opportunities. Social markers and factors "beyond" gender (marital status, family togetherness, intra-household cooperation, age and educational levels) influence relations between actors in innovation spaces, and their opportunities for exerting agency therein. Therefore, access to innovation spaces, and opportunities for women and men to exert agency in these spaces are shaped by intersecting systems of oppression (and privileges). Indeed, experiences shared by the five women underscore the need to avoid "stylized facts" about the interface between gender and innovation systems, especially "facts" about gender roles portraying women as "homogenous innovators" isolated from men. Similarly, Badstue et al. (2017) emphasizes that Afghan women's involvement in wheat-production and other cropping activities depends on a number of factors, such as economic standing, marital status and land ownership. Similarly, the force, interpretation and salience of gender norms and gender roles in shaping the relations between actors in innovation systems differ between geographies and among groups of women (and men). Hence, over-generalizations of the positions and conditions of women in agricultural innovation systems could grossly undermine policy relevance and planning.

Women's experiences

Nadia, Najia, Lana, Bomani and Rahila's written experiences added important nuances to the insights of how gender roles and norms shape relations and interactions between farmers forage innovation system in Afghanistan. Indeed, the broader study finds gendered (and persistent) differences in women and men's innovation needs and preferences, as well as a difference between men and women's perceptions of the roles men and women should/could have in the forage system. As such, it is paramount that researchers and development practitioners take into consideration both women and men's lived experiences when designing their research and/or programmes and projects aiming at supporting agricultural development and innovation.

Further research

The findings of this paper is an invitation to explore the ways gender roles, norms and relations influence socio-technical structures “beyond” innovation spaces (niches) in agricultural innovations systems, namely regimes and landscapes. This call is inspired by gender and agriculture studies and literature on multi-level perspectives. The social and gender landscape represents macro-level trends and contextual drivers for innovation, whilst the regime is a system of social structures and practices that includes unequal power relations and harmful norms (Sarapura and Puskur, 2014). Innovation spaces, regimes and landscapes all interact in different ways to ensure the production, reinforcement and reproduction of social relations, and hence gendered differences in the position and condition of different groups of women and men in innovation systems. Indeed, gen-

der inequality in agricultural innovation processes is produced, reproduced and reinforced, not just in households, but through a range of institutions across innovation systems - including in government agencies and in the marketplace. Such a focus can generate more knowledge on how gender holistically influences innovation processes in agriculture. This focus can also zoom in on how changes in gender roles, norms and relations in regimes and landscapes can cause changes in the gendered nature of innovation spaces and vice versa. This paper highlights that gender relations, norms and roles are dynamic and change over time due to factors external to a given innovation space, such as armed conflict. Therefore, it is important to consider how and why the wider social, political and economic environments are influencing, positively and negatively, actors in innovation spaces.

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