RESEARCH PROGRAM ON Roots, Tubers and Bananas

GENNOVATE
ENABLING GENDER EQUALITY IN AGRICULTURAL AND ENVIRONMENTAL INNOVATION

"Women can do it!" Stimulating more inclusive innovation in root crop- and banana-based agri-food systems[1]

"Women can do it!" say participants in an all-female focus group in a village in southern Bangladesh, voicing their determination to pursue commercial agriculture opportunities despite their unpromising social context. Restrictive gender norms prevalent in the region constrain these women's possibility for independent action or agency, reduce their access to productive resources, and severely limit physical mobility beyond the homestead. These women in Bangladesh are not an exception, but rather an example of the constraints that many women negotiate across different regions when it comes to agricultural innovation.

Harvesting banana in Uganda • Credits, S.Quinn/RTB

Understanding the interplay of gender norms and agency with agricultural innovation is at the heart of a large gender research project launched within the CGIAR[2] in 2013. Gender norms can be viewed in this context as those societal rules governing men's and women's roles and everyday behavior and interactions; agency, as "the ability to define one's goals and act upon them" (Kabeer 1999, 438). GENNOVATE ("Enabling Gender Equality in Agricultural and Environmental Innovation") is an unprecedented global research collaboration of 11 CGIAR Research Programs (CRPs) and nine research centers that implemented 137 case studies in 26 countries.

GENNOVATE aims to use this understanding of gender norms and agency to engage agricultural researchers and decisionmakers. In doing so they strengthen the impact of their work by more systematically incorporating gender equality objectives in agricultural research for development (R4D) interventions.

The CRP on Roots, Tubers and Bananas (RTB) and the former CRP on Humidtropics were leading members of the partnership, undertaking 24 case studies between 2014 and early 2016 in 10 countries: 7 in Sub-Saharan Africa (SSA), 2 in Asia, and 1 in Latin America and Caribbean (LAC) (Table 1).

Table 1: Location of case studies

Major Regions	Country	Number and Location of Cases
LAC	Colombia	4 cases in northwest coastal area
SSA	Burundi	2 cases in Cibitoke and Gitega provinces
	Democratic Republic of the Congo (DRC)	1 case in South-Kivu in eastern DRC
	Kenya	2 cases in western Kenya
	Nigeria	2 cases in southwestern Nigeria
	Rwanda	1 case in Kayonza District in Eastern Rwanda
	Malawi	2 cases in Ntcheu and Phalombe districts in Malawi
	Uganda	4 cases in the eastern, central, and western areas
Asia	Bangladesh	2 cases in southern Bangladesh
	Vietnam	4 cases in northern and central Vietnam

[1] This brief and the report on which it is based were prepared by the RTB CRP gender team: Rene Bullock, Marlene Elias, Nozomi Kawarazuka, Netsayi Mudege, Gordon Prain (managing editor), Anne Rietveld, Lucila Rozas, and Amare Tegbaru.

[2] CGIAR is a global research partnership for a food-secure future. CGIAR science is dedicated to reducing poverty, enhancing food and nutrition security, and improving natural resources and ecosystem services. Its research is carried out by 15 CGIAR Research Centers in close collaboration with hundreds of partners, including national and regional research institutes, civil society organizations, academia, development organizations, and the private sector.

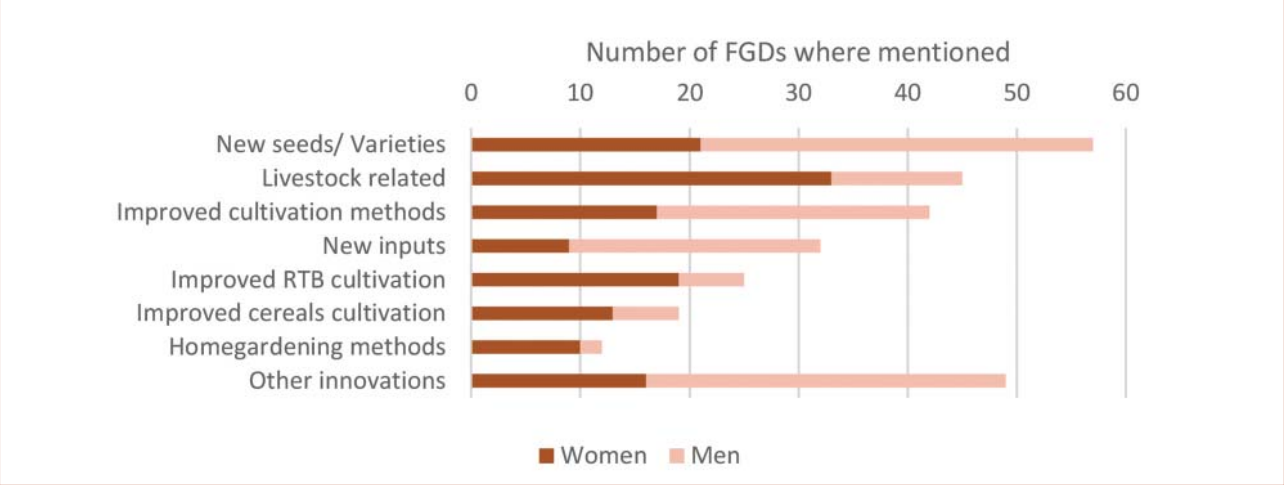

Figure 1: Top two innovations self-selected by men's and women's groups (cited in FGD) in all case sites.

The case studies and their analysis were based on a contextually grounded, comparative methodology using qualitative tools that can help strengthen agri-food systems thinking in the 2016–2020 CGIAR's Strategy and Results Framework.

Agricultural innovation priorities, drivers, and key sources of support for men and women

How do gender norms influence women's and men's innovation priorities? New, improved crop varieties are the top-preferred innovation for all who participated in focus group discussions (FGDs) (Figure 1), although there is considerable variability by gender and region in the types of crops of interest and the characteristics of preferred varieties. Preference for varieties is especially important in SSA, which is the only region where new varieties are the preferred innovation for women (Figures 2 and 3). This is linked to the regionally specific (agri)cultural complex prevailing in much of Africa. Here, women manage their own semi-independent plots separate from their husbands and give great importance to new varieties of their chosen crops for these plots. In the SSA case countries, RTB crop varieties are often preferred for these women-managed plots: sweetpotato in Uganda and Burundi, cassava in Kenya, potato and sweetpotato in Malawi, and cassava in Nigeria and Burundi. The importance of these crops for women is also shown in how often improved cultivation of RTB crops is selected as one of their top two innovations (Figure 2).

New varieties were also the most important type of innovation for men's groups outside Africa, especially rice among Asian men's groups and cassava in LAC.

The most preferred innovations for all women are related to livestock (Figure 2). Almost 100% of women's groups in Colombia identified different kinds of small livestock among their top two innovations. About a third of women's groups in SSA had new livestock management practices as one of their top two innovations. New opportunities with small livestock were also top innovations for many women's groups in Bangladesh; in Vietnam women cited commercial opportunities through pig-raising as a reason to prioritize these small livestock. Large livestock such as draught or dairy animals were more frequently cited by adult men's groups in the overall sample. Some women's groups and young men identified norms restricting their access to the significant resources

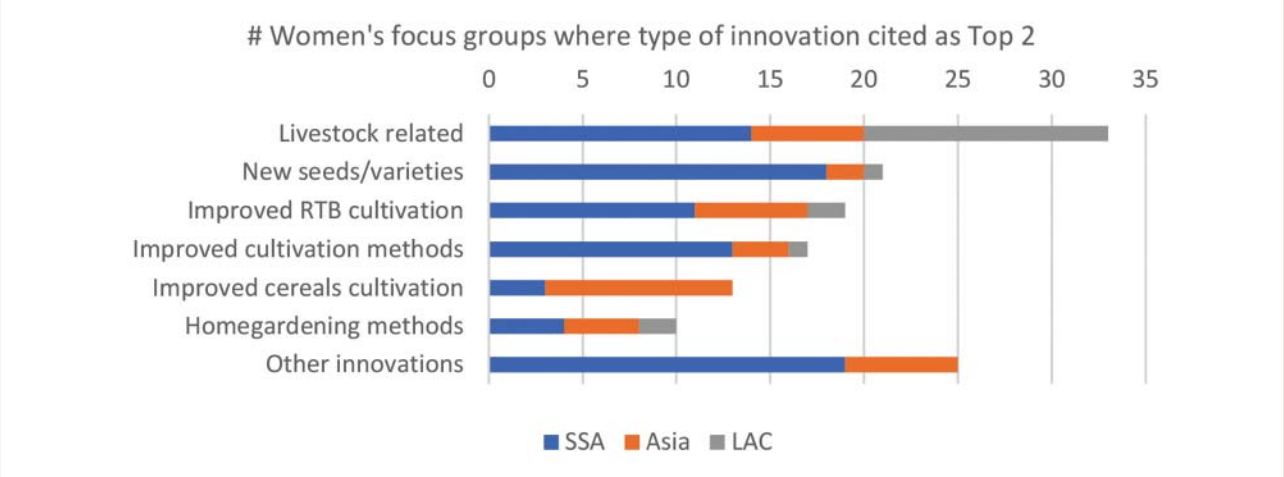

Figure 2: Top two innovations self-selected by women's groups, by regions.

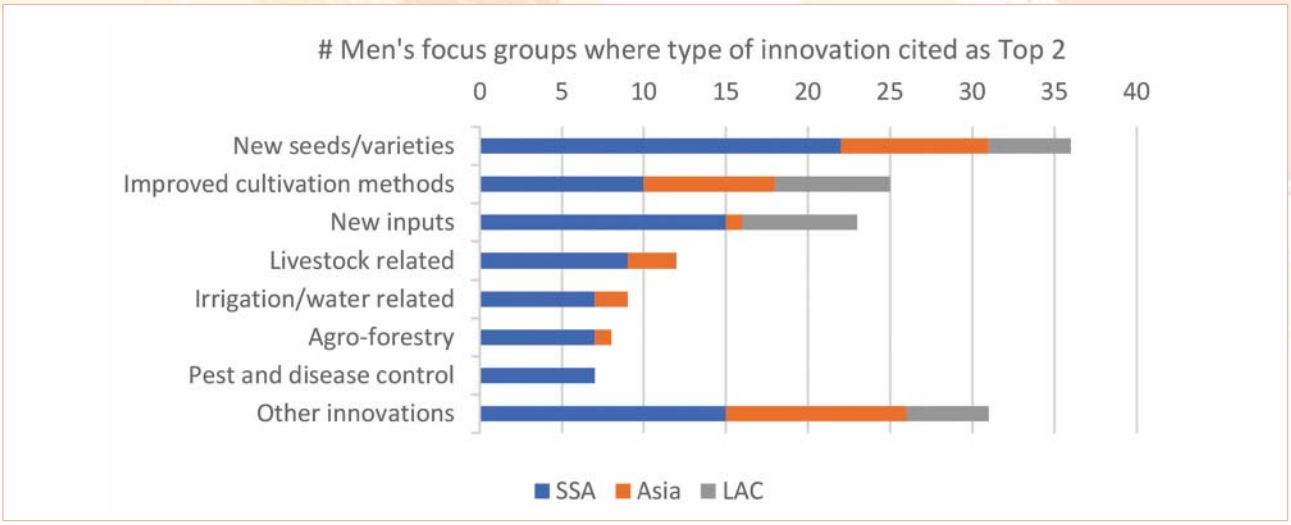

Figure 3: Top two innovations self-selected by men's groups, by regions.

needed to both acquire and maintain these animals as reasons for not prioritizing the raising of these animals. But these normative restrictions proved rather variable. Zero-grazed dairy cattle in western Kenya fit in well with women's other work commitments in the home and provided an important income source. Some of the women's groups in Vietnam also cited the new breeds of oxen as top new innovations for themselves. Better-off women in central Vietnam, however, cautioned that buying and selling large livestock could only be done with men's involvement and approval: "A water buffalo can start a whole fortune. Women can decide to buy a pig, but a cow costs tens of millions of dongs, so I must ask my husband." So improvements in livestock-raising in general fit in well with women's reproductive responsibilities and, in some cases like Bangladesh, with normative restrictions on physical mobility. Small livestock also are adapted to the limited access to agricultural resources and do not challenge patriarchal norms about large household investment decisions.

Improved cultivation methods and use of inputs are especially important for men in SSA and LAC more than in Asia. In the former these are often associated with conservation agriculture and systems approaches in the vulnerable hillside agriculture in Central Africa. An important focus of innovation in input use in these contexts is related to improved use of manure.

What drives men's and women's choices about preferred innovations? Men, both young and adult, and women cited income benefits with similar frequency as a reason for ranking certain innovations among their top two. But the significance of "income" differed between these groups. For many women's groups, especially in SSA, innovations were identified as a source of personal income, separate from that earned by the spouse, and thus a source of increased agency for themselves. In seeking to earn income, women and men have different crop and livestock options, as discussed above. With less access to physical and financial inputs, women and youth often choose crops and livestock with lower investment and lower profit.

Many innovation choices by women's groups respond to concerns about family food and nutrition needs:

> *Where we live if we don't plant cassava, we may starve. Cassava is important for household food security. … It is also preferred to maize in terms of taste … (and) you keep on harvesting and eating cassava.*
>
> ***Better-off women's group in Burundi***

Although cited less frequently than women, men reported food security reasons for the choice of new practices—for example, their frequent reference to hybrid maize varieties in Nigeria for feeding the household. They also value women's agricultural production for its contribution to household food and nutrition. This underlines the importance of also engaging and targeting men and young boys in nutritional education programs, both to strengthen their own direct contribution, but also to understand and facilitate women's contribution.

Women cited several other drivers of innovation. One concerns the opportunities for women's greater independence and decision-making afforded by a new practice. The preference for livestock and innovations related to home gardens both respond to this factor. Other drivers included the desire for less drudgery and opportunities for greater interactions between different practices leading to whole system benefits, such as the use of crop by-products as feed and animal waste as fertilizer. Yet another driver is the opportunity for integrating women's responsibilities for maintaining and reproducing the domestic domain with agricultural production (e.g., through zero-grazing dairy cattle in the home alongside the domestic work in western Kenya). Men also appear to value system benefits from interactions between different innovations, especially in some of the SSA cases like Burundi with its strong emphasis on system conservation.

How differently do men and women value physical, financial, and social assets for supporting agricultural innovation? Both women and men identified the availability of assets, especially financial capital and land, as primary factors enabling innovation. Men's greater opportunity to take advantage of sources of credit can be an important advantage, and their greater control of access to land has implications for the types of crops men and women grow. Consequently, this affects the type of livestock raised, as has been seen, and the types of crops grown. Cash crops like banana and coffee are perennial, and require fixed-use rights over land for cultivation. They also are capital intensive, requiring access to credit. In the case studies examined, men were predominantly responsible for large animals and these types of crops, whereas women usually lacked the resources to acquire them: "Men dominate the bananas although women work there most times. A young women's group in southwestern Uganda reported that "Most women do not have banana plantations and, even when they hire land, they only plant seasonal crops because the land owners do not hire out land for planting bananas."

Women frequently mentioned family harmony and positive personal traits as key elements supporting their exploration of new technologies and practices across all cases in SSA, Asia, and LAC:

> *It is because I was living in harmony with my husband – he allowed me to go for trainings, he allowed me to handle income from sales. Without this, I would not have been able to adopt orange-fleshed sweetpotato and benefit from it.*
>
> ***Better-off women's FGD, Uganda***

These conditions enabled women to be more economically active, but they also underline the power differences between men and women in terms of access to and control of key productive resources. Although in Vietnam women had more independence in some economic spheres than in other case contexts such as Bangladesh, men could withdraw their labor and withhold use of family finances if they were not happy with the woman's choices or behavior. In Uganda women seek household harmony, but also face obstacles from spouses in pursuing economic opportunities. According to one better-off women's FGD in Uganda, "Women may ask the husband for a portion of land to grow something [but] he will just keep quiet and not reply and the woman goes ahead to grow the crops on that piece. Later on the men will come and plant their bananas in that same plot."

Harvesting cassava in Mkuranga district, Tanzania • Credits, H.Holmes/RTB

Under these kinds of normative environments, women need to continually negotiate new personal opportunities with their spouses (e.g., to gain access to land in the face of their spouse's initial opposition). Women often must show deference in marital relations and participate in social networks outside the home as strategies to achieve their innovation goals. The results of this study indicate that those engaged in R4D interventions need to pay more attention to social relations and intra-household decision-making, and not just focus on the technologies to achieve successful and equitable innovation and adoption.

A deeper dive into norms, agency, and innovation

What does it mean to be a good farmer for men and women? How women and men think about themselves and their spouses in their agricultural roles, the ideas they have about what it means to be "a good farmer," can have tangible effects on agricultural decision-making, resource access, and innovation. Across the case studies men and women concur that men should be knowledgeable, skilled, and responsible heads of household who are a prominent source of the latest technical information in the community. They also agree that women play a supporting role in agriculture, that they exist "in men's shadows." This normative characterization, however, has different meanings in SSA than it does in Asia or LAC. The SSA case studies reflected a common cultural complex in the region in which adult women farmers have obligations to their spouses, but are semi-independent managers of their own plots. There are as well expectations about their farming role, especially related to ensuring household food security and contributing to or even dealing with key household expenditures such as school fees: "[A woman farmer should be] someone who is able to work just like a male farmer and is usually self-reliant or independent of the husband" (low-income men's group, Malawi).

In contrast, women in Bangladesh and Vietnam are expected to contribute to a family farm run by the male household head, so the male shadow under which women farm is longer and stronger in Asia. This is clearly expressed in Bangladesh:

Women in SSA are constrained by land plots that are smaller and with poorer soil quality than men • Credits, N.Palmer/CIAT

> *[She should] help husband with the cultivation. Take the help of husband with homestead cultivation….(she has) to discuss with the husband about marketing the crops. Encourage husband for buying and selling the crops and help him to get the right price. …*
>
> ***Low-income men's group, southern Bangladesh***

Though women frequently mention the importance of agricultural knowledge, they also agree with the men's assessment: "If she helps her husband with his cultivation works then she is a good farmer" (low- income women's group, southern Bangladesh). Though different from SSA, the situation is more nuanced in Vietnam, especially in the way that women are seen to be potential stand-ins for their husbands when they are absent (as is commonly the case): "[A woman] knows how to use farm equipment, in case her husband is not at home, she can use it… Main qualities of a good woman farmer is similar to those of a good man farmer" (low-income men's group, central uplands of Vietnam). Such qualities include knowledge of cultivation, animal raising, and marketing. Women have similar sentiments: "If the husband is away, the wife knows how to spray pesticide … how to harvest the cassava for selling to the processing factory ... how to plant pepper trees … how to weed, to use chemical fertilizer …" (poor women's group, central uplands of Vietnam).

Women in the SSA cases were also constrained in their farming practices because of the limited size and often poorer soil quality of their plots compared with men's plots. In addition, their access to inputs is limited, as is their time because of obligations to work on their spouses' farms and their domestic responsibilities. A widespread, commonly shared norm in SSA expressed by men and women is that a good woman farmer is associated with having a vegetable garden and tending small animals; to bringing food to the hearth for cooking and feeding the family. The norms do not expect woman farmers to be successful coffee growers or producers of plantation crops—intensely commercial activities that are expected to be handled by men. Nevertheless, the case studies found gaps between these normative expectations and what happens in practice on the farms. Banana is a key commercial and food security plantation crop in Central and East Africa normatively characterized as a "man's crop." Yet the study found this norm to be fluid, mainly in cases with female-headed households and where men were absent due to migrant labor.

The ability to pursue individual goals strongly affects agricultural innovation. Men's and women's agency, either independently or jointly with others, is made possible through capacities and access to physical, financial, and social assets. Agency is clearly central to involvement in agricultural innovation. Many types of norms influence capacities and access to assets; but restrictions on physical mobility directly affect a woman's ability to act, to acquire new skills through trainings, to network, and to engage in business. There is a lot of variation across the cases. The greatest restrictions on all except older women to move around beyond the homestead were found in Bangladesh, but were more relaxed in the case locations in SSA. Nevertheless, even in the SSA cases, many young women commented on the need to at least inform and often to ask approval from husbands or parents to go out. They reported on the difficulty associated with going out "just for leisure," without a clear-cut purpose, especially for younger, married women. Others expressed concerns about negative gossip if they are out after sunset; still others commented about some young husbands restricting their wives out of sexual jealousy. Normative constraints on physical mobility can also be indirect. Many young women in the SSA cases mentioned that they had too many tasks in the household to be able to go out much.

Agency can also be influenced through gender norms surrounding status and leadership. Men, because of their gender, often "inherit" agency through titles such as household head, elder, or village leader. Women, because of their gender, mostly must "earn" agency over time through negotiation, use of non-contested physical spaces like household plots, and though activating social networks of different kinds. Compared with 10 years ago, both men and women feel more empowered across most of the cases. Some of this can be attributed to the increased agency that comes with age-related change of status, although improvements in family livelihoods were also identified as a factor. This is also linked to improvements in education. Finally, increased support from a changing external environment strengthens agency, especially for women. New policies against domestic violence in certain SSA countries are an important example, as are the actions of development agencies involving training and specific support to women.

Youth face special/unique problems of exclusion and lack of agency in agriculture. For young men and women across the sample, norms around inter-generational and gender relations often limit their capacities for innovation. When still under their parents' control, young

men have little scope for taking decisions or accessing resources. This is expressed sometimes in a reverential way, as by a young men's group in southwestern Bangladesh: "Until death of the parents there will not be any division of assets. … But, parental guidance always matters." Sometimes it is expressed more impatiently, as by a young men's group in western Kenya: "Most of our parents are there. There is no freedom in terms of the ability to access land. There is just no power or freedom to get land." Young women face a double burden of exclusion in many of the societies studied: Women are first under parental control, which is severe in societies like Bangladesh where control of women's sexuality is an overriding norm; they then get married and move in under the authority of their husbands. This societal norm underlines the need to focus not only on the technical aspects of agricultural innovation, but also on the social context. If young people view gender equality negatively, it can curtail young women's ability to take decisions.

Opportunities for more inclusive innovation

The study identified four types of interventions, or social conditions, that can help women, men, and communities maximize opportunities for agricultural innovation.

1. Interventions that encourage informal social networks and help link them with formal institutions will increase chances for women and men to be involved in agricultural innovation. One tool applied among better-off focus groups, known as the "ladder of power and freedom," sought to understand self-perceptions of agency at present and approximately 10 years ago (Figure 4)[3]. The study found that among better-off groups in the entire sample, women's power and freedom have increased more than men's in the past 10 years.

When the data on power and freedom are further disaggregated, less than half as many women as men locate themselves on the top rung (12% vs. 27%). Fewer women than men located themselves on the bottom two steps (17% vs. 20%). In other words, while still identifying social limitations on their power and freedom, most women locate themselves on steps 3 and 4, indicating some sense of personal agency. Meanwhile, 20% of men in the sample feel themselves lacking agency.

An important aspect of agency for both women and men concerns the level of engagement with formal organizations and networks related to agricultural innovation and the intensity of involvement with informal social networks. The study found that across case locations, men and women with limited decision-making power (as reflected in the ladder of power and freedom) are less engaged with formal and high-status organizations and networks related to agricultural innovation. For them, informal social networks among peers are an alternative source of agricultural information and can strengthen small-scale innovation and thus expand opportunities. Acquired knowledge of what peers are successfully achieving with new practices under similar environmental and economic conditions can be as meaningful a learning experience as participating in a formal training. Nevertheless, those with limited power and freedom lose out in such things as access to new types of training, external technologies, and credit. By targeting women active in social networks as participants in technical innovation processes, external agencies can accelerate the spread, adaptation, and uptake of new options for the less powerful and at the same time contribute to increasing their self-confidence.

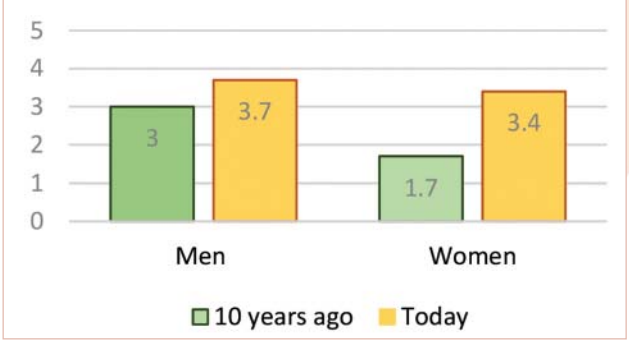

Figure 4: Changes in self-perceptions of personal power and freedom over the past 10 years among better-off women across the whole sample.*

* Identified through FGD participants locating themselves on a "step" of power and freedom ranging from 1 to 5, with step 5 indicating the highest amount of power and freedom.

2. Innovation processes are affected by diversity and competitiveness within communities and households. Envious neighbors can discourage innovators; they can spread negative rumors or even destroy the innovation. Threats to norms of male authority can also discourage innovation. The reasons why women do not adopt new technologies are not always associated with their lack of skills or financial capacity. Instead, it can reflect their concerns that innovation causes jealousy among their peers or husband. Especially in SSA countries in the east and south, women's economic success can be seen as a threat to norms of male authority, provoking jealousy and sometimes punitive actions among husbands and discouragement among their wives. Women do not have such a reaction when their husbands are successful. Some women suggest that men's jealousy may come from their assumption that their wives' increased mobility and financial capacity allow them to interact and have relationships with other men.

3. Agricultural interventions need to be aligned with local expectations and demands of women and men farmers. Across the cases in Asia, SSA, and Colombia (LAC), men are interested in innovation that produces high yields, cash incomes and agricultural assets such

[3] For more information on this tool see http://42q77i2rw7d03mfrrd11pvzz.wpengine.netdna-cdn.com/wp-content/uploads/2018/02/Ladder-of-Power-and-Freedom-Tool-Feb-2018.pdf

as land, equipment, and livestock. This may be because material wealth embodies the masculine attributes by which they distinguish themselves from women and poorer men. In fact, many men attribute their increased power and freedom to their increased earning, yield, material assets, or all three. In contrast, women's empowerment pathways are more diverse and complex. And although for women gaining material benefits through higher yields and increased cash income is also important, they are not the only keys to climbing the metaphorical ladder of power and freedom. Three types of empowerment pathways were identified among the complex and sometimes contradictory and overlapping individual choices and strategies women pursue: achieving increased economic independence; increasing their own power and confidence; and maintaining household harmony and supporting husbands (Figure 5). Agricultural interventions need to consider this mix of perceived empowerment pathways in the design of technical and capacity-strengthening interventions.

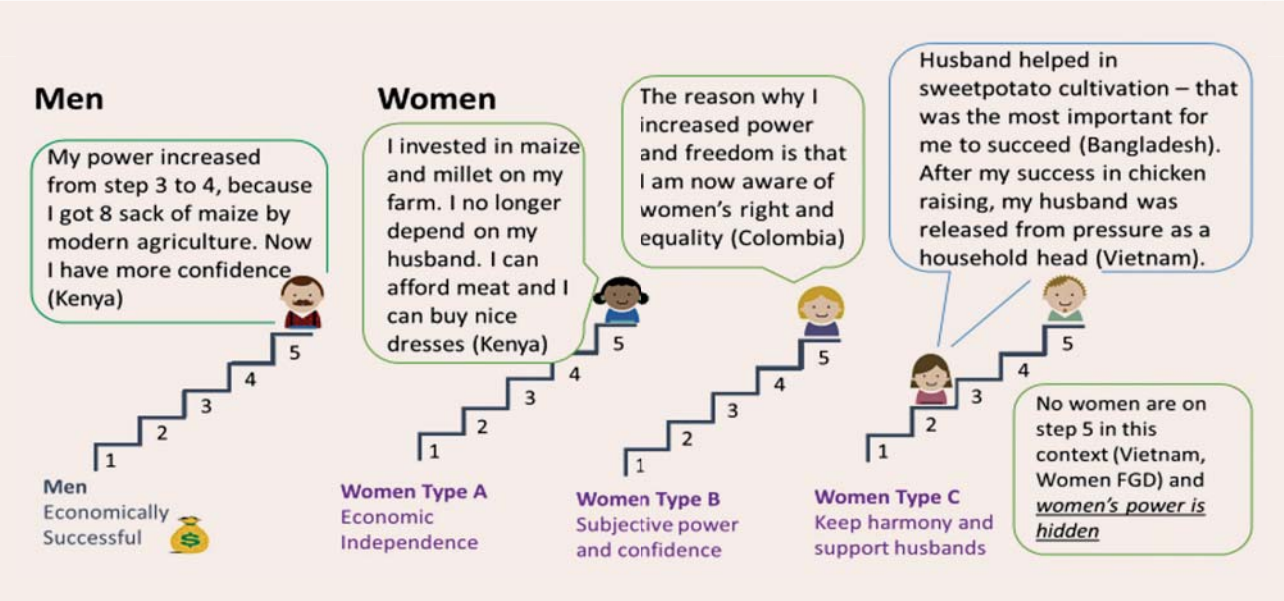

Figure 5: Men's and women's gendered empowerment pathways.

Harvesting potato at a demonstration plot in Malawi • Credits, V. Atakos/CIP

Understanding the gender-based shaping of preferences can help RTB create interventions appropriate for women, youth and men • Credits, H.Rutherford/CIP

4. The domestic domain can be a key source of agency for women, not just a constraint. Across the diverse cultural contexts of our sample, women's domestic responsibilities such as provisioning, food preparation, and child-rearing are commonly viewed by themselves as causes of their lack of time, lack of training, and limited physical mobility. Any or all of these can prevent them from engaging with agricultural innovation processes. At the same time, women do value aspects of this domain, including the nurture of children, who also become important assets for their future security. Many mothers across the sample appear to be empowered and more innovative through the financial support received from their independent sons or married daughters. Furthermore, though women clearly derived a gendered self-identity and a mode of relating to spouses and in-laws through domestic responsibilities like cooking, men have limited control over these domestic spaces in communities where the case studies were conducted. This has enabled women to respond to changing economic circumstances and shifting norms by expanding their own economic responsibilities and activities in such areas as raising animals and growing vegetables in home gardens. Women have autonomy and decision-making power in these spheres. Moreover, they are highly motivated to explore new technical options and practices, such as orange-fleshed sweetpotato and new livestock species and management approaches. Interventions need to build on this autonomous sphere of innovation to support expansion into more commercial scales where desired.

Conclusion

RTB research communities understand the need to include gender analysis to ensure more inclusive and equitable development outcomes. However, including representative numbers of women participants in research interventions and documenting their views are a necessary but not sufficient solution. The level of engagement of men and women in research interventions and, especially, the opinions they express are shaped by underlying social processes, including sets of gender norms. These norms and the possibilities for action that they circumscribe help to explain variable participation in agricultural innovation and the types of preferences expressed. Insights from GENNOVATE gender research into these underlying processes have uncovered different drivers, opportunities, and constraints which lead women and men to prioritize differently new crop- or livestock-related practices and combinations or novel ways of managing agro-ecosystems. Understanding the gender-based shaping of preferences can help RTB to formulate interventions that are socially appropriate for women, youth, and poor men, thereby leading to higher rates of adoption and more inclusive and equitable impact pathways.

GENNOVATE research has also explicitly sought to understand the way household and community power relations and self-perceptions of personal power also shape innovation decisions. Knowing which practices/technologies or institutional arrangements are best able to empower women through broadening their social and economic options can lead to transformational outcomes.

Acknowledgements

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