



Sweetpotato in diverse economies: Women farmers in Ha Tinh province, Vietnam

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Sweetpotato production in Ha Tinh city, North-central coast, Vietnam.

Photo credit: N. Kawarazuka

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Abstract

Linking smallholder farmers to markets has been one of the major approaches to improving food security. This approach is often combined with women's empowerment as well by emphasizing women's greater involvement in market-oriented agriculture. However, it implicitly undervalues women's roles in non-market-oriented agriculture and unpaid family labor. This is partly because current mainstream value-chain analyses are premised on a capitalist economy that separates production from the non-capitalist form of all activities. The aim of this study is to gain a more nuanced understanding of non- or less-market oriented agricultural activities led by women farmers and the oft-neglected value of these activities in rural households. The study employs the concept of diverse economies which consider non-market-oriented activities as part of various economic systems, including subsistence farming, exchange of food, and exchange of labor. A case study was conducted in a community in the Ha Tinh province in Vietnam in April 2021, when COVID-19 had little impact on agriculture. Findings show that women manage non-market-oriented sweetpotato production, which is central to maintaining a local seed system, a reciprocal support system, and livestock production. Furthermore, women choose the best varieties of sweetpotato and use their own social networks for obtaining planting materials and distributing the sweetpotato harvest, enabling women to control both agricultural production and the distribution of benefits. In this context, shifting to commercial agriculture is not a desired form of agricultural development for women. Interventions in agricultural value chains require careful considerations of women's aspirations and household strategies embedded in broad production and reproduction within extended and intergenerational family relations.

Key words: gender, value chains, seed systems, feminization of agriculture, Vietnam

1. Introduction

Gender and value chains in agricultural development tend to focus on the issues of women's limited involvement in market-oriented agriculture, as women are often excluded or adversely included in upgraded value chains in the process of commercialization (Coles and Mitchell, 2011). The issues behind male dominance in market-oriented agricultural value chains are complex and context-specific. These issues involve gender norms and power relations that shape gender divisions of labor and unequal access to resources, land, and technologies (Quisumbing et al., 2015). However, when these gender issues in value chains are transferred into development policy and interventions, it is often simplified as if women's greater involvement in market-oriented agriculture is a solution for food security, gender equality, and women's empowerment. Addressing gender inequality through individual women's increased involvement in market-oriented value chains is far too narrow (Gengenbach et al., 2018). In fact, evidence suggests that integrating more women into commercial value chains does not automatically lead to women's empowerment (Quisumbing et al., 2021).

Value chain approaches overlook women's agency and aspirations in non- or less-market-oriented agriculture involving unpaid labor input, such as the utilization of agricultural produce for home consumption, gifts, and animal feeding. This is because agricultural value chains are framed within the dominant discourse of capitalism, where non-market-orientated activities are completely separated from economic analyses. To address this issue, Gibson-Graham (2008) proposes the concept of diverse economies as an alternative to research within the capitalist economy that narrowly focuses on economic activities and their value. This allows researchers to accommodate a range of non-capitalist forms of economic activities in market analyses. Diverse economies scholarship (e.g., Fickey, 2011; Gritzas and Kavoulakos, 2016) embraces plurality and diversity in economic activities including informal markets, cooperatives, and gift-giving involving various forms of labor including unpaid and exchanged labor. This approach agrees with feminist critiques of the dichotomies between production and reproduction in capitalism and offers an alternative view on economic systems that are dependent on reproduction and non-market-oriented agricultural activities, in which women play significant roles.

This study takes the above feminist critiques of market analyses and explores women's involvement in sweetpotato value chains within diverse economies. The aim of this study is to gain a more nuanced understanding of non- or less-market oriented agricultural activities led by women farmers and the oft-neglected value of these activities in rural households. A qualitative case study was conducted in Ha Tinh province in Vietnam in April 2021, when the study site experienced limited influence from COVID-19. It explores the indirect benefits of local sweetpotato production and exchange where women farmers' decisions and negotiations are central.

The report structure is as follows: Section 2 presents the research methods. Section 3 briefly describes the research context in Ha Tinh province, on the north-central coast of Vietnam. Section 4 demonstrates the key findings. The discussion section questions the use of a uniformed approach in promoting women’s involvement in commercial value chains in international development and highlights the importance of diversifying methodologies and concepts in value chain research to understand women’s perspectives and to incorporate women’s perspectives into agricultural policy and planning.

2. Research Methods

A qualitative case study was conducted in April 2021 in a village in the Dan Truong commune in the Nghi Xuan district in Ha Tinh province on the north-central coast of Vietnam. Data collection was undertaken through separate focus group discussions of men and women, key informant interviews of formal and informal input suppliers, key seed promoters, and a seed producer, in-depth interviews with five couples to follow up a household survey conducted in 2020, and in-depth interviews with women farmers whose family members are abroad for work.

The selection of respondents was led by the village leader, as the Vietnam government does not allow researchers to select respondents on their own. To avoid biases, we provided criteria for the respondents, and the village leader listed a number of potential respondents that was more than double the required number. We randomly selected respondents from the list given by the village leader.

The tables below present the characteristics of the respondents for in-depth interviews and key informant interviews. The respondents’ names have been changed to protect their privacy.

Sweetpotato growing households (husband and wife)

Name	G	Age	Sweetpotato area (in sao**)/ total farm area (in sao)	Seed purchase # of seasons in self multiplication	Off-farm incomes
Chau	M	65	2/15	Daughter-in-law who lives in Xuan My	2 sons, daughter-in- law
Van	F	64			
Phu	M	69	1/8	A female trader from Xuan Hong	Daughter
Thanh	F	67			
Quan	M	67	1.5/5	Female friends (via a trader)	1 son 2 daughters
Lien	F	67			
Cuong	M	59	1/7	Female friends (via a trader)	Son-in-law Taiwan
Oanh	F	67			
Tho	M	29	1/8	Female friends (via a trader)	1 son, 1 daughter-in- law
Ngoc	F	20			

*1 sao = 500 m²

Seed systems key informants

Name	G	Age	Sweetpotato areas (in sao*)	Seed purchase
Thuong	F	62	2	The first person who introduced a new variety through her daughter's working place
Mai	F	47	2.7	The farmer who adopted a new variety and a representative of a group purchase of seed
Duc	M	n/a	7.5	Planting material seller (phone interview)

*1 sao = 500 m²

Agricultural Input provider key informants

Name	G	Age	Type of organization	System Type	Type of input
Phuong	F	54	Farmer Union	Formal	Seed, fertilizer (through Co-ops)
Yen	F	38	Private trader	Informal	Seed (groundnuts), fertilizer

Households depending on remittances

Name	G	Age	The relationship with a migrant	Destination	Year started
Uan*	F	54	Her son	Japan	August 2015
Phuong*	F	54	Her son	Japan	October 2018
Tung	M	32	Himself	Soon Taiwan	May 2021
Minh	F	32	Her husband	Japan	July 2019
Chuong	F	49	Her son	Japan	Oct 2019
Cuc	F	60	Her first son & daughter-in-law Her second son	South Korea	Jan 2011

All interviews lasted around one hour. When possible, we visited sweetpotato farms and observed sweetpotato processing, livestock, and home gardens. Interviews were not recorded, but notes were taken after an agreement was made with the respondents, including informed consent.

3. Research Context

3.1 Sweetpotatoes in the Ha Tinh province

Ha Tinh was ranked 8th in sweetpotato production in Vietnam in 2018, with 3,692 ha of production areas that produce 26,067 tons of sweetpotatoes annually. Although the productivity of this province remains low compared to that of a commercial sweetpotato production area in Vinh Long province at 7 tons/ha compared to 28 tons/ha, this is because the focus of the Ha Tinh province is on producing specific tasty vines for human consumption and roots for livestock. Nghi Xuan district has the largest production area in the Ha Tinh province.

In 2020, a household survey of 78 households was conducted in Ha Tinh city and Nghi Xuan and Huong Khe districts. According to this survey, sweetpotatoes for root production are grown mostly in two seasons: from August to December (autumn-winter) or from December to April/May (winter-spring). Some plots are grown year-round for home consumption and animal feeding. Outside these specified seasons, many farmers grow maize or peanuts on the same land used to grow the sweetpotatoes. In many cases, households have a separate field for rice production. Interviews with the village leaders suggested that the production of sweetpotatoes has increased over the past decade in most of the villages.

Within the survey samples, the average farm size per household for sweetpotato production is around 700 m² with an average income of 125 USD per year mainly from root selling (not including other indirect incomes from livestock via animal feeding). 46% of the households purchase their own planting material, mostly from neighbors and friends. The total investment costs for fertilizers, pesticides, herbicides, and planting materials per household is around 26 USD, with a cost breakdown of 17 USD for fertilizers, 7.5 USD for planting materials, and 1.5 USD for pesticides and herbicides. The input cost per m² for sweetpotatoes is relatively low compared to that of other crops. Unlike the commercial sweetpotato production areas in Vinh Long province, in Ha Tinh, family members are the main source of labor for sweetpotato production, with women making up 64% of this labor source. Only around 10% of the total work on average was conducted by hired labor. With hired labor, women are paid 150,000-200,000 VND/day (equivalent to 8.7 USD /day) for lighter work such as planting, weeding, and harvesting, while men are paid 300,000 VND/day (equivalent to 13 USD/day) for heavy labor such as land preparation and harvesting. According to the village leaders and representatives, the main challenges in sweetpotato production are seed degeneration, lack of access to quality seeds, lack of access to markets with high or stable prices, unfavorable weather conditions such as droughts or floods, and labor shortages.

3.2 Sweetpotato varieties, certification, and markets in the Dan Truong commune

The dominant sweetpotato variety in the Dan Truong commune is the local white sweetpotato (white/beige skin and flesh), sometimes referred to as “Chiem bong/dau” variety, which was grown by 92% of the surveyed households and used for livestock, home consumption, and local market selling. The Chiem bong/dau variety has been grown in the study site for a long time, at least since the surveyed households' parents' generation. Other sweetpotato varieties include Khoai đỏ/Ba Tháng (red skin, white flesh), Ruột vàng (red skin, yellow flesh), and Khoai tím (purple skin and flesh).

Sweetpotato roots and vines are sold directly to consumers or small buyers. In the survey sample, most of the sweetpotatoes were sold fresh. The market price for sweetpotatoes in Ha Tinh varies according to the varieties and the size, and farmers possess little bargaining power with buyers. The retail price of fresh roots in 2020 was 8,000 VND/kg for Chiem bong/dau and 15,000-18,000 VND/kg for Khoai đỏ/Ba Tháng. The retail price of processed sweetpotatoes ranged from 20,000 – 28,000 VND/kg.

3.3 Animal feeding, processing, and storages in the Dan Truong commune

According to the household survey, on average, the households in Dan Truong commune sold 22% of their root production and used 51% for animal feeding and 23% for home consumption. The remaining 2% was kept as seed for the following season and for other purposes. Almost all the households (96%) used sweetpotato vines and/or small roots as animal feed. However, only 16% of households intentionally grew sweetpotatoes for that purpose.

After harvesting, farmers store their roots inside the house or outside under the roof before selling them at local markets. There was no processing factory within the survey areas, so most of the processed products were homemade using simple methods.

4. Findings

4.1 Gender roles and household strategies for farming

According to the focus group discussions and the in-depth interviews in this study, most men (of all working-age groups) and young women (both married and unmarried) work outside the village, and this work forms the major household income sources. In the study village alone, 50 men worked abroad, with most in Japan, several in Taiwan, and a few in South Korea. Farms are kept and managed by women farmers above the age of 50. The average age of the respondents in the household survey conducted prior to this study was 60 in Dan Truong, which is 10 years older than Lam Dong province, where agriculture is the main occupation for many of the men.

This trend of women's greater involvement in agriculture is called the "feminization of agriculture" in the relevant literature, and it brings both opportunities and constraints to women farmers depending on the gender norms and economic conditions where they live (Doss et al., 2021). In some areas, the "feminization of agriculture" is considered to be the "feminization of distress" (Pattnaik et al., 2018), as women must manage farming with limited labor and financial resources. In other contexts, women take over men's management roles, challenging stereotypical women's secondary roles in farming (e.g., Lukasiewicz, 2011). In the Ha Tinh province, the men's labor migration does not necessarily burden the women's labor, as, in the absence of the men, farms either turn to less labor-intensive crops (such as fruits and timbers) or the women downsize the scale of farming to size within their labor capacity and invest in non-farming activities (Kawarazuka et al., 2020).

Given that rural households have off-farm incomes and a problem with labor shortages, many households in the study site were not interested in investing in commercial agriculture. This smallholder strategy of keeping farms in a less profitable manner for household food security is a common trend in rural Vietnam (Nguyen et al. 2020) and in neighboring countries (Bhandari and Mishra 2018; Rigg et al. 2016 and 2020).

In the study site, men only help with farming when male labor is required. Our in-depth interviews of five couples (representing a typical sweetpotato growing household in this village) showed that men have limited knowledge and labor participation in agriculture, except those for rice production. Young women (both married and unmarried) worked in factories within the district and grew rice but not other crops, as rice is by far the most important crop as a staple food, and its production activities are mostly mechanized. As such, the main sweetpotato growers are women in their 50s and 60s. The vice-chair of the commune farmer union stated that middle aged women do everything from plowing the farmland using buffalo to harvesting and transporting the agricultural produce.

4.2 Intra-household decision-making in agriculture

According to the focus group discussions and the in-depth interviews of women farmers and their husbands, both women and men see the women as the managers and decision-makers of farming, while the men act as the laborers for their female managers. Women acknowledge their husbands' labor contribution in specific activities such as plowing, ridging, harvesting, and transporting. Those activities are done by both men and women, but male labor is essential for certain labor-intensive activities and husbands with salaried jobs take leaves to participate in those activities. In this respect, the extent of the husbands' support matters in women-led agricultural productivity and production. One respondent, Ms. Lien, stated: "My husband works very hard. He cannot decide what to do by himself, as he does not know, but he follows my guidance and do what I asked, which I really appreciate because I know, in some households, men are lazy, and their wives have to work very hard in agriculture." Our interview with her husband confirmed that he has limited knowledge of agriculture in general and particularly in sweetpotatoes. The interview with Ms. Lien's husband was finished within 30 minutes since he could not speak much about farming.

The most time-consuming and labor-intensive activity in sweetpotato production is ridge making, according to all 10 respondents, both men and women. This activity requires male labor, and it takes place twice per cropping season. Mr. Nam, who invests in agricultural machines and leases them to village farmers, is unwilling to invest in sweetpotato machines due to insufficient demand to gain profit (sweetpotatoes are often grown in small spaces where machines cannot fit).

In-depth interviews with five couples also confirmed that the household's final decisions on important matters such as building houses and borrowing money from banks are made by men in all households. The only exception was a widow respondent who makes decisions by herself. Despite this, decisions on agriculture are fully made by women, including the choice of crops and crop varieties and the selling of crops. Women also have control over the money from agriculture, including livestock. During the interviews, we measured the subjective notions of power and freedom from the respondents' own perceptions, in which they described the perceived level of power on a scale from 1 (no power) to 5 (full power). All women selected 5 for their position in agriculture and 4 for their husbands' positions in agriculture and sweetpotato decisions. The result was consistent with the men's perceptions. All the men selected 5 for their wives' position in agriculture and 4 for their own position in agriculture. However, it should be noted that the women respondents were relatively old and often lived with daughter-in-law in either the same house or next door. Therefore, their seniority appears to influence their perceived power.

The above results on decision-making are consistent with those of the household survey in this commune of 24 households, including 5 widows. The results show that: the wife is in charge of the selection of planting material (all 25 households); the wife makes decisions on the sweetpotato varieties (all 25 households); and the wife makes decisions on expenditures from sweetpotato incomes (24 households).

4.3 Women's roles in sweetpotato and seed value chains

Agricultural value chains in the study site can be categorized into two value-chain systems: state-driven formal value chains and informal value chains formed by individual farmers and traders. In the study site, women dominated the production nodes of all the agricultural value chains. However, men still dominated in the formal value chains.

A state-driven system allows registered farmers to obtain seeds and agricultural input with subsidies. The farmers can then sell their produce to the state-supported cooperative and/or the state-supported (male) traders. Currently, farmers have this option for rice, maize, and other new crops for trials (e.g., fruits), as they are priority crops for the agricultural departments at the district level and above. In this chain, male farmers are partly involved, as it is the household heads who register their names for purchasing and receiving seeds and agricultural input in the farmer union, which is an organization dominated by men.

An informal value-chain system involves individual/private seed producers and agricultural input sellers and traders, although some actors work in the former chains as well. Sweetpotatoes and groundnuts mainly belong to this informal value-chain system. According to key informant interviews and information from the commune officer, there are three individual women who act as input suppliers (seeds, fertilizer) and traders in the Dan Truong commune. Ms. Yen is one of them. She has 70-80 households as regular customers to whom she sells groundnut seeds and fertilizer, and she offers credit to two-thirds of her customers, where they receive their goods first and pay her later after harvesting. Ms. Yen usually purchases 2-4 tons of groundnut seeds from a trader in the neighboring Nghe An province. She then sells the produce of her customers (all women) to the same trader and to others. She buys 17-18 tons of fertilizer from two major companies (one state-owned and one private) and sells this fertilizer to her customers (all women) in the Dan Truong commune. Ms. Yen's house does not have any outside advertisement, but everyone knows her business. She is a farmer and her trust in the quality of seed comes from her own experience as a farmer. The lower stream of this chain within the commune (e.g., producers, input suppliers) is dominated by women.

Sweetpotato value chains are much more informal and small-scale compared to the value chains of groundnuts. These value chains are built on women's social relations, rather than business-orientated interactions. For example, a new variety of sweetpotatoes (Khoai đỏ) was introduced in this village in 2016 by one Ms. Thuong's daughters, who works in the Xuan Hong commune (10 km from the study commune). Her daughter found that the taste of the sweetpotato in Xuan Hong was quite delicious, similar to chestnuts but with a cassava-like texture. She bought a bunch of planting material for her mother, who then planted them on the edge of her groundnut farm as a trial. The news of this delicious new variety of sweetpotato immediately spread to the entire village after Ms. Thuong shared her harvested roots with other women farmers. However, the self-multiplication of this new variety was unsuccessful. Ms. Thuong's daughter therefore identified a female seed seller's phone number in Xuan Hong.

Currently, all the women sweetpotato growers in her village buy the planting material for Khoai đỏ from this female seed trader in Xuan Hong. The trader only delivers the material to this village if the amount is 400 kg or above, so the women farmers form a group to purchase collectively. Ms. Mai is one of the representative farmers who coordinates with the other women. She told us that in a peak season, she must wait for 4-5 days to receive the material, but so far, there has been no significant delay in the delivery, and the farmers can plant on time in the right season.

We found that the original planting material of Khoai đỏ is produced in Nam Dan, Nghe An province, a hilly area where there is no flooding. From there, the planting material is delivered to Xuan Hong by traders. Mr. Duc, a large-scale farmer in Xuan Hong, purchases G1 (generation one) planting material and multiplies them (G2) for selling. Mr. Duc and his three brothers work together on their 15 ha of agricultural land, half of which is used for sweetpotato seed production and root selling. This shows that the women-dominant informal sweetpotato value chains depend on large-scale male farmers and unknown seed producers in the neighboring province.

Some women directly sell Khoai đỏ roots to their friends through the phone. The household survey in Nghi Xuan confirmed that only 4 households out of 25 sell roots to a trader. The rest of the households use these roots for home consumption or gifts, the details of which are discussed in the next section.

The value chain of another local variety of sweetpotato, Chiem bong/dau, is very simple. Most Chiem bong/dau are grown for vines, not roots, for home consumption and for feeding cattle. Some people sell dried vines to neighbors who own cattle. The seeds of this local variety can be multiplied by the women farmers, and one Ms. Mau said that she has been using self-multiplied vines as seeds for the past 20 seasons.



Figure 1: from left, 1) Interviewing a woman input supplier/sweetpotato grower, 2) A boiled Khoai Dau sweetpotato (it tastes chestnuts) 3) The Song Gian village gate. This village was awarded as the best village in the new rural development scheme.

4.4 Indirect economic and social benefits of sweetpotato production and distribution

As mentioned earlier, sweetpotato varieties in the Dan Truong commune are less productive as compared to the hybrid varieties used in the commercial production of sweetpotatoes. Planting materials of the Khoai Đỏ variety are just as expensive as that of groundnuts but less profitable. Despite this, women farmers continue to choose to grow “less-productive” and “low-profit” sweetpotato varieties. What are the hidden economic benefits that motivate women farmers to grow these specific varieties?

First, women farmers give Khoai Đỏ to their extended families and friends, especially their adult sons and daughters who do not engage in agriculture. This gift-giving is called “quà quê” in Vietnamese, translating to “hometown gifts”. Hometown gifts, which are mainly agricultural commodities, are often sent to relatives in urban areas, who go on to distribute these agricultural commodities to their friends, colleagues, and neighbors. Sweetpotatoes as hometown gifts can be sent in return for remittances, which the adult children give to their parents and/or in-laws. For example, one Ms. Van’s household harvested 1000 kg of sweetpotato roots, 200 kg of which were for gifts for her married son and her two daughters and their families living in other provinces. Similarly, one Ms. Thanh’s household had 750 kg of roots and sent 210 kg of them as gifts to her friends and to her daughter’s family. This indicates a hidden economic value of sweetpotato within intergenerational reciprocal support. Women farmers highly value the taste and texture Khoai Đỏ as it can work as a valuable gift.

The gift-giving of sweetpotatoes and other agricultural produce plays a significant role in ensuring a safety net among extended families. For example, Ms. Cuc is a widowed farmer. Her husband died a long time ago from dengue fever when he was working in Ho Chi Minh city. His first son is married and lives in Binh Duong, north of Ho Chi Minh city, and his wife works as an accountant. Ms. Cuc sends food, including rice and delicious sweetpotatoes, to them, while her adult children (her married daughter, her first son in Binh Duong, and her second son in South Korea) send remittances to her in times of need. During the COVID-19 pandemic, her children's incomes were significantly reduced, and her agricultural produce supports her first son and daughter and their relatives, who live in urban areas. Similarly, Ms. Minh's husband, Sang, works in Japan and his income is also unstable due to the COVID-19 pandemic. In Ms. Minh's household, food comes from their own paddy field and the farms of her mother-in-law, who lives next door. These inter-generational exchanges of food and remittances is often overlooked in the household survey, as farmers may not mention it. Thus, this non-market-oriented value chain involves safety nets and food security for not only rural farmers but also for the urban youth and migrant workers within the inter-generational reciprocal support network between adult children and their old parents. This is in contrast to the fragile market-oriented sweetpotato value chains in the time of COVID-19, which resulted in both domestic and export supply chain disruptions in Vietnam (Long, 2021).

Second, both the vines and the roots of sweetpotatoes are used to feed cattle. In-depth interviews confirmed that around 50-80% of their cattle feed came from sweetpotato roots and vines. Sliced roots and vines are dried and stored by women farmers. Cattle are a source of manure for farming, labor for plowing, and the calves are an important source of income, all of which are managed by women. This confirms that although rural landscape and labor patterns are rapidly changing, sweetpotato production for animal feeding is still important in rural Vietnam, as shown by past studies in the 2000s and 2010s (Ly et al., 2010; Peters et al., 2005).

Third, labor input for sweetpotatoes is smaller for women when compared to the labor input needed for groundnuts, which require much more time for weeding. Manure is not required for sweetpotatoes, which also saves both male and female labor. There is no prominent problem for pests and diseases, making it easier for women to manage sweetpotatoes alone. In this respect, although sweetpotatoes are not as profitable as groundnuts in terms of market prices, women consider their unpaid labor and time as an important criterion for their crop choice.

Forth, sweetpotato value chains and seed value chains are fully controlled by women farmers. They make decisions on seed procurement, production, gift-giving and selling, mostly without depending on external market conditions. This is critical for women farmers who oversee household food security and maintain relationships with kin. The Chiem bong/dau variety (used for animal feed) is either multiplied by women farmers, or they can purchase planting material from other women. The planting material of Khoai đỏ is as expensive as groundnut seed. However, its seed system has been developed collectively by women farmers and their trusted traders. It is these women-established and women-oriented seed systems that enable women to maintain their producer bargaining power and independence, as compared to commercial planting material from private seed companies.



Figure 2: from left, 1) sun dried chips, 2) small roots for feed, 3) dried sweetpotato vines mixed with maize and other vegetables for feed, 4) many households keep at least one cattle. Photo credit: N.Kawarazuka

5. Discussion and conclusions

This study has explored the sweetpotato value-chains from the perspective of diverse economies which consider non- and less-market oriented activities as a core part of economic activities. The findings have revealed that sweetpotato cultivation consists of diverse economies through gift giving, the exchange of planting materials, and animal feeding, all of which economically impacts not only sweetpotato growers' households but also their neighbors, friends, and kin through diverse distribution mechanisms. While women are concentrated in these diverse economies, in contrast to men who engage more in the market economy outside the village, the former activities led by women are as important as the latter led by men in sustaining the overall household economy. At the household level, women control sweetpotato production and distribution, and they also control the incomes from agriculture and livestock, while men work as laborers for their wives. Men's unpaid labor in sweetpotato production is essential in maintaining the sweetpotato value chains (including the non-market-oriented value chains). Men prioritize their responsibility for (unpaid) farming over their paid work during the planting and harvesting seasons. This is important evidence that rural households value small-scale non-commercial farming as part of the household economy. Furthermore, women's social networks enabled the study village to access a new delicious sweetpotato variety, called Khoai Đỏ. Women also act collectively in securing and purchasing planting material. Women, therefore, are key to strengthening the informal seed systems and sustaining agriculture in a way they benefit from the best.

Women's management roles and their control of farm resources give a notion of independence and autonomy to middle-aged and elderly women. Women's value in sweetpotato production is not necessarily based on productivity and profit but rather on its multiple benefits, including its role as a valuable gift to strengthen reciprocal support relationships and its low requirements for time, labor, and agricultural input. In this regard, high-market value sweetpotato production with higher investment is not the desired form of production for rural women in this specific age group.

Agriculture and off-farm incomes play a supplemental role with each other to strengthen the overall household livelihoods within extended families. The agriculture budget (including agricultural input) does not depend on off-farm incomes. The strength of this less-market orientated farming is that women farmers can sustain their food production regardless of off-farm incomes, which are affected by external economic conditions. While this may be a typical characteristic of women-led agriculture with small investment, it is also a strength, as resilient agriculture in times of crisis, such as COVID-19 pandemic which negatively affected wage work and disrupted agricultural supply chains. Women's roles in farming and their farming management strategies contribute to the livelihoods of not only their husbands, but also their extended families such as their adult sons and daughters.

This study also confirms that relationships between production and reproduction, paid and unpaid work, and selling and gift-giving cannot be separated in economic analysis, as their relationships are not dichotomous, but rather interdependent and interwoven with one other. Women's concentration on non-market-oriented activities does not mean that women contribute less to the overall household economy. In this specific context, the commercialization of sweetpotato production is less likely to attract women farmers. Commercialized sweetpotato production would not necessarily bring greater household food security or women's empowerment for these women. Rather, they may lose their control and experience increased dependency on external market conditions and financial resources. The concept of diverse economies thus enriches our understanding of gender and value chains and highlights the importance of appropriately evaluating non-market-oriented agricultural activities as part of economic systems. Further research is required to explore women's hidden and/or less-visible roles in the household economy in the context where male-dominant market-oriented agriculture is a major source of household income.

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