



FEMALE FARMERS AND INCLUSIVE GROWTH IN VIETNAM



Institute for Family and Gender Studies



Australian Government



United Nations Entity for Gender Equality
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Female Farmers and Inclusive Growth in Vietnam

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Acronyms

ADB	Asian Development Bank
DFAT	Australian Department of Foreign Affairs and Trade
FAO	Food and Agriculture Organization
FGD	Focus group discussion
GDP	Gross Domestic Product
GSO	General Statistical Office
IDI	In-depth interview
IFAD	International Fund for Agricultural Development
ILO	International Labour Organization
MOCST	Ministry of Culture, Sports and Tourism
MOLISA	Ministry of Labour, Invalids and Social Affairs
SIDA	Swedish International Development Cooperation Agency
UNDP	United Nations Development Programme
USD	US dollar
WB	World Bank

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Assoc. Prof. Nguyen Huu Minh

Director of Institute for Family and Gender Studies

Executive summary

This research examines the impact of i) policies and programmes related to land issues, credit, technology application, infrastructure development, and market access; ii) community socio-economic circumstances; and iii) individual and household characteristics of the agricultural production of female farmers who are rice and orchard producers.

The methodology includes: 1) A literature survey on gender perspectives of the implementation of agricultural policies; and 2) A qualitative survey in four provinces in which the proportion of agricultural households makes up the majority of households. The provinces are selected based on geographical and economic zoning and include Hai Duong, Hoa Binh, Binh Dinh and Tien Giang. In these selected provinces, the research team conducted 72 in-depth interviews and 24 focus group discussion with women and men who do rice and orchard farming and with local officials.

The report presents a gender analysis related to agriculture, findings from the qualitative study and policy implications. The key results are presented below.

Reforms in land use policy, agricultural restructuring and new rural development programmes are favourable conditions for female farmers in their agricultural production development. The land use right certificate now given to both spouses affirms women's rights to land property, creates eligibility for women to gain access to loans and amplifies their voices in household decisions related to taking out loans for agricultural production. Mechanization in agricultural production which is manifested in the use of agricultural machines reduces women's labour burden in cultivation and saves women's time for leisure and extra income generating activities. Women's roles in rice and orchard farming are better acknowledged by family and community members.

However, in practice, men in rural areas are the primary beneficiaries of economic reforms. This fact has diminished the recognition of women's contributions to agricultural economic reforms and the cultivation economy. Below are the main challenges for female farmers in rice and orchard production.

1. Women play the key role in the agricultural labour force; however, their per capita income is relatively low. Income from agricultural production in rice and orchard farming especially is not enough to support farmers' lives and their households. Despite the fact that women are overrepresented in the agricultural labour force, their participation is much less than that of men, especially in the orchard farming sector which is presently very productive.

2. Agricultural land is downsized and scattered and that reduces the use of land for cultivation. The rate of ownership and access to the land by female farmers, especially those who are from mountainous areas are less than that of men. Hence, women's role in land and human resource use for socio-economic development is diminished.
3. The conditions for applying for a loan are not favorable to women, as typically signified in the requirements of the land use right certificate. Female farmers mainly rely on informal credit sources. In comparison with men, rural women have fewer opportunities to acquire loans and financial control. Some of the reasons given are attributed to their poor knowledge about the process of making loan applications and the lack of power they have over their household economies.
4. The observation remains that a household's agricultural production is based on experience and often on traditional practices. The linkage amongst farmers, State, scientists and distributors in the cultivation sector which is expected to make agricultural production more efficient and productive is lacking. Women both account for a small number of participants in technical training and technology transfer workshops and have limited access to technological information. That is the reason why they often face risks in their work in agricultural production and selling products on a large scale.
5. While several processes of agricultural production have been mechanized to reduce human labour, men are the main beneficiaries because they are involved in machinery-related tasks like tillage, harvesting, processing and transport.
6. The market economy has brought about a new diversity of, and better access to, seedlings and agrochemicals, for farmers. However, in the context that farmers' knowledge, generally, and that of female farmers, particularly, about fresh and clean agro-produce is weak, the market access of these farmers is a serious issue. The overuse of fertilizers and pesticides also has an impact on the products and the farmers' health, especially for women. The lack of connection with and support for each other amongst farmers is the reason why they are disadvantaged when it comes to setting prices. The policies on market access only provide farmers with general market information rather than offering concrete measures favouring women.
7. Women's access to resources and decision making is less than that of men. In the cultivation sector and agricultural projects, women participate in training, meetings and experimental implementation but rarely in monitoring and management. Similarly, women's participation in agricultural extension models relates to raising livestock and cultivation but they seldom participate in mechanization models. This has reduced the productivity of women's participation in cultivation.
8. The "feminization" of agricultural production which is closely associated with male migration burdens women with most of the farming work. Accordingly, women undertake not only traditionally-considered women's jobs like sowing and weeding but also take on

the so-called men's jobs like ploughing, fertilizing, and pesticide spraying. This creates pressure on women to take on more farming responsibility without providing additional time to do so.

Women are more vulnerable to the consequences of climate change and its resilience than men from three perspectives: productivity, housework and community activity participation. Worse resilience to climate change causes economic losses.

9. Traditional gender prejudice toward women's role in agricultural production remains firm amongst a number of women. There are women with the traditional mentality of depending on their husbands. Gender awareness and gender mainstreaming are not well understood by grassroots officials and agricultural businesses, especially by men.

10. There are differences amongst surveyed communes and types of households in terms of women's participation in cultivation and access to productive resources. Women in migrant households play very active roles in agricultural production. The proportion of women participating in rice and orchard farming in the Red River Delta and Central Region is higher than that of the Mekong River Delta because of respective high rates of male migration in the first two regions.

Based on the analysis of key challenges to women's participation in the cultivation of rice and orchard growing, this report recommends several points to apply to policymaking in favour of increasing women's contributions to inclusive growth. Specifically, the report proposes possible changes in the policies related to land, capital, technology, markets, climate change response and gender awareness.

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1

Introduction

1.1. Background

Under the Doi moi (reform) policy embarked on by the Vietnamese Central Party, the agriculture sector in Vietnam has made great strides in the past years. Agriculture contributes 20% to GDP of the whole economy and account for about 50% of labour force (GSO, 2014).

The policy of restructuring comprehensive agriculture aiming at generating income for farmers has proven the appropriate direction for Vietnamese agriculture sector in this period. Regarding rice cultivation and fruit crops, the harvests have increased significantly with a large surplus for export (Ministry of Agriculture and Rural Development, 2014). In 2014, rice production reached approximate 45 million tons, increasing by a million tons or 2.3%; rice production reached 6.52 million tons and 3.04 billion USD, an increase of 4.2% in term of value against 2013 (Ministry of Agriculture and Rural Development, 2013). Fruit crops generated a quite good harvest, especially crops of orange, mandarins, mangos, pineapples, bananas and grapes and continued bringing about good economic value, estimated to reach a productive growth of at least 2.5% compared to the previous year. Vietnamese vegetable products do not only meet domestic demand but are also exported and have become favorite products in many countries.

Despite its progress, in the context of the market economy, integration and severe competition, agriculture has encountered several difficulties, including: small production scale, out of date technology, poor infrastructure, and weak policies. These resulted in the low quality and productivity of many agricultural products. A system of agricultural product consumption is absent. The fragmentation

and scattering of land plots decrease the effectiveness of resource use because it is almost impossible to apply technology, mechanization and irrigation systems to these areas effectively. This also makes it difficult to develop large-scale production and that increases costs of production and marketing. There is a serious shortage of water for production. Water can be reached to only 43% of the areas planted in vegetable and industrial crops. Nearly 20% of the villages are not connected to the national electricity grid. Electricity in rural areas is mostly supplied for lighting and not enough for irrigation and production. There are frequent blackouts in rural areas. The services for supplying agricultural techniques like seeds, livestock, plants, pesticides are inefficient and fail to ensure the high quality of supplies and the control of agricultural material supplies (Dang Kim Son, 2014). Climate change has direct impact on agricultural production and the quality of the soil. Diseases also influence situations that complicate the survival and success both livestock and plants.

Agricultural activities of female farmers play an important role in the inclusive growth in Vietnam. One of the goals of the Comprehensive Strategy on Growth and Poverty Reduction is to boost rapid and sustainable economic growth focusing on developing agriculture and rural areas, ensuring gender equality and improving farmer's lives, especially vulnerable groups. In the meanwhile, agricultural production in Vietnam relies largely on female workers. In rural areas, gender difference in labour is significant with 63.4% of women working in agriculture sector against 57.5% of men (WB, 2011).

Meanwhile, although female farmers account for a large proportion of the agricultural labour force, they often own small-area fields and cultivate self-subsistence crops. According to the 2012 Vietnam Household Living Standard

Survey VHLSS, over 45% of women work for themselves in the agricultural sector, while 38% of men do. Research points out other disadvantages for women in accessing small-scale credits in rural areas, technology, training and agricultural extension services. Women have to spend most of their time on housework and that restrains them from contributing to agricultural development. New policies related to agricultural development have yet to make sea changes in gender relations in the agriculture sector. This fact affects women’s participation to agricultural activities and reins in their contribution to the inclusive growth of the country. These reasons encourage the Institute for Family and Gender Studies, with the generous support from the UN Women in Vietnam and Australian Department of Foreign Affairs and Trade (DFAT), to conduct research that focuses on the factors influencing the livelihoods of women in agriculture.

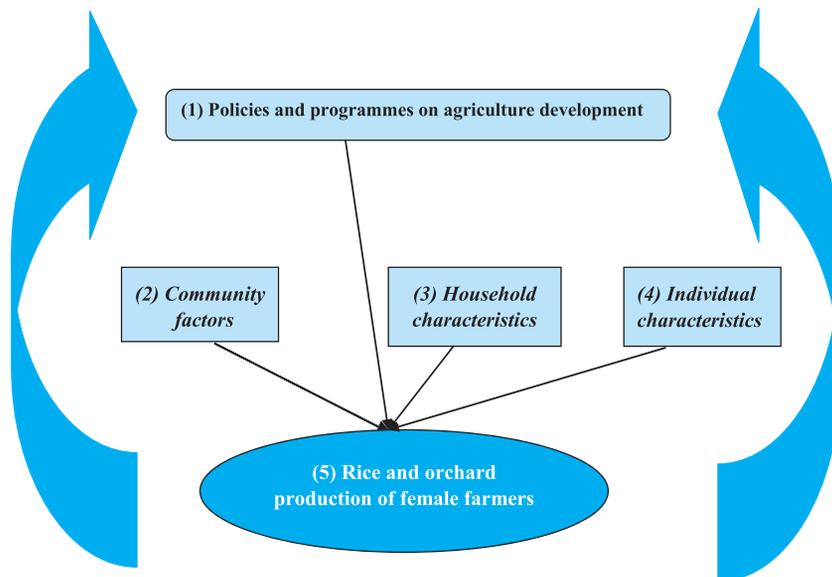
1.2. Objective of the research

The objective of the research is to examine and analyze the factors influencing the livelihood and income generation of female farmers focusing on those who are involved in rice production and orchard growing. In particular, the research reviews previous literature on gender perspectives in agriculture policies and analyses the impact of several factors on women’s participation in rice production and orchard growing based on the data from a qualitative survey.

1.3. Methodology and research site

The research examines the extent to which the factors of agricultural policies, socio-economic characteristics of community, household and individual characteristics influence the agricultural production of female farmers, based on the analysis framework of women and inclusive growth as seen below.

Analysis framework relating to female farmers and inclusive growth in Vietnam



Source: Developed based on International Fund for Agricultural Development (IFAD) Sustainable Livelihood Framework (IFAD.org)

Explanation of framework:

(1) Policies and programmes on:

- Land: land use right, regrouping of land
- Credit: interest rates, bank loans
- Programmes on the application of technology and science on agriculture production
- Infrastructure development programmes (roads, irrigation)
- Market linkage policies: support to farmers in selling products, market information provision

(2) Community factors

- Cultural factors: gender conceptions on the roles and capacity of men and women
- Natural factors: weather conditions and climate change
- Local land planning
- System and quality of agricultural development services at communes
- Infrastructure development: roads, irrigation system and pumping stations, low voltage station.

(3) Household characteristics:

- Household land scale
- Family types: family with two spouses at home, family without husband at home/or No husband at home (migrant husband/working away/husband died/divorced)
- Agricultural production forms: rice production and orchards growing
- Living standard: better-off, medium, poor
- Decision making of female farmers
- Gender-based labour division in agriculture production

(4) Individual characteristics:

- Education
- Health
- Marital status
- Knowledge and skills of agriculture and technology

(5) Rice production and orchard growing by female farmers:

- The capacity and opportunity to gain access to programmes and policies: including access to loans, finance and training, participation in workshops, hiring and decisions about land usage.
- Market and land use opportunities
- Decision making in the process of cultivation
- The extent of participation in cultivation

To implement the objectives of the research, the research team did a desk review on existing literature on the gender aspects in agricultural policies. A qualitative survey was conducted in 04 provinces in which farming households account for the majority of all households. The selected provinces represent geographical-economic regions in Vietnam, including Hai Duong, Hoa Binh, Binh Dinh and Tien Giang. In each province, the research team selected a commune in which rice production and orchard growing are the foci. In total, 72 in-depth interviews (IDI) and 24 focus groups (FGD) were conducted with men and women in 4 communes about the factors influencing the rice production and orchard growing by households and, also, women’s participation in this work. The factors include land issues, infrastructure, technology and science application, market linkage and others. In addition, the research team discussed local plans and programs focused on agricultural

production and support for female farmers, with communes’ local officials. There were 305 individuals, including 39 people from the Muong ethnic minority group (in Thanh Hoi commune, Tan Lac district, Hoa Binh province) participating in individual interviews and group discussion.

Given the typically tropical geographical and soil characteristics of Vietnam, cultivation activities are different from region to region. Rice is mainly planted in the Red River Delta and Mekong River Delta. Orchards grow in several places under large production schemes, such as in the provinces of Hai Duong and Bac Giang with lychees, the provinces of Ha Giang, Nghe An, Vinh Long and Tien Giang with oranges and other fruit, and the provinces of Ben Tre and Binh Dinh with coconuts. These geographical differences were seriously taken into consideration in the selection of research sites.

The characteristics of the research site are presented below¹.

Region	Selected site	Characteristics
Red River Delta	Truong Thanh commune (Thanh Ha district, Hai Duong province)	- Subtropical climate - Rice, guavas, lychees, pomelos
Northern Midlands and Mountains	Thanh Hoi commune, (Tan Lac district, Hoa Binh district)	- Subtropical climate - Rice, pomelos, oranges
Northern and Coastal Central	Tam Quan Nam commune (Hoai Nhon district, Binh Dinh province)	- Tropical climate - Rice, mangos, bananas, coconuts, watermelons
Mekong River Delta	Tan Hung commune (Cai Be district, Tien Giang province)	- Tropical climate - Rice, dragon fruit, pineapples, rambutans, star apples, durian

1 See Appendixes 1 and 2 on more details of research site and sample.

2

Research on Gender Issues in Vietnamese Agriculture



Photo: Institute for Family and Gender Studies

2.1. Socioeconomic characteristics of the agricultural labour force in Vietnam

In recent years, the sectoral structure in rural households has changed rapidly in a positive direction as signified by a decrease in the number and proportion of households in agriculture, forestry and aquaculture; and an increase in the number and proportion of households in industry, construction and service sectors¹. However, these changes are not equal among regions. The shift of sectoral structure was fastest in the Red River Delta, followed by the Southeastern region². Midlands-Northern mountainous areas and the Central Highlands have shifted very slowly over the past five years. From a gender perspective, women accounted for about 50.6% of the total agricultural workforce in 2013, decreasing gradually from 53.4% in 2009. It should be noted that the proportion of trained workers in agriculture, forestry and aquaculture sectors is very low. Workers aged 15 or older in agriculture, forestry and aquaculture accounted for about 46.8% according to 2013 data. However, the percentage of trained workers is only about 3.5%.

In the last five years, the lives of rural people have improved and their earnings

have increased greatly. The average income of a rural resident in 2010 increased by 112% compared to the average income in 2006 (GSO, 2010). This has created an opportunity for rural residents to increase their accumulation of capital. According to preliminary results, the average cumulative capital of a rural household on 1 July, 2011 was 16.8 million dong, 2.5 times higher than on 1 July, 2006 (the respective figure of 2006 compared to 2001 was 2.1 times). The rate of increase of the average cumulative capital of a household is relatively unfluctuating across the regions, but the disparity in the accumulation amount across the regions is increasing. The Southeast region has the highest accumulation level with average accumulative rate of 24.2 million dong a household, while that in the Northern mountainous area was only 9.1 million dong a household.

Regarding average income, data from the 2012 Vietnam Household Living Standard Survey (GSO, 2012) indicated that the average income of a household member in rural areas was 1,579,400 dong per month in 2012. In rural areas, in 2012 revenue from agriculture was 434,800 dong (out of a total of 1,579,400). A monthly average income of a worker in the agricultural sector was about 5.1 million dong in 2012, a slight decrease from 5.6 million dong in 2011. Regarding sources of earnings, the households in agriculture, forestry, aquaculture and salt production sectors accounted for 62.1% of total rural households, but the number of households having the biggest incomes from these sectors accounted for only 57.8%. Thus, the proportion of households with the largest earnings from agriculture,

1 Compared with 2006, the proportion of households working in agriculture, forestry and aquaculture sectors in rural areas dropped from 71.1% to 62.0%, proportion of households working in industry and construction sectors increased from 10.18% to 14.73 %; the proportion of households working in service sector from 14.9% to 18.4%.

2 The proportions of households in industry, construction and service sectors rose from 33.0% in 2006 to 44.5% in 2011 for the Red River Delta and from 46.7% to 58.1% in the South East.

forestry and aquaculture households is lower than the proportion of households in agriculture, forestry and aquaculture, whereas the proportion of households with the largest earnings from industry, construction and service is higher than proportion of households in industry, construction and services.

2.2. Agriculture policy and gender issues

2.2.1. Land policy

The 2003 Land Law (amended in 2013) states nine rights for land users, including: the right to exchange, assign, inherit, donate, lease or sub-lease land use rights; to mortgage, guarantee or contribute capital land use rights. There is no discrimination between men and women as land users. Everybody has the same rights and obligations to the land allocated by the State. Especially, the Law affirms that the land use right certificate needs entitling to both husband and wife. Generally, the policy of giving people the right to land use, allowing exchanging and assigning the land use rights has boosted the investment in land and a reallocation of land, which deliver on improvements in agricultural productivity. The certificate of land use right given to both husband and wife is an effort to address gender inequality in terms of giving equal access to social resources and ensuring women's equal right to land.

In support of industrialization and modernization, a large area of agricultural land has been reclaimed to develop

industrial zones and new urban areas³. Narrowing of the area of arable land has caused difficulty for rural people and women when they look for jobs. In the Red River Delta, on average, each hectare of reclaimed farmland resulted in the loss of the jobs of 15 rural people and 20 people in Hanoi (Huyen Ngan, 2009). Due to the limitations related to labour skills and gender biases, women have experienced more disadvantages in finding jobs than men (Hoang Ba Thinh, 2009; Cling et. al., 2011).

The issuance of certificates of use right to land owners is slow (World Bank, 2005). According to the 2012 Vietnam Household Living Standard Survey, from 2006 to 2012, the proportion of land use right certificates issued for the annual crop land was about 84% and perennial crop land was 80%. Having no certificate of land use right means farmers are constrained from having opportunities and the access to resources in society (Coxhead et al., 2010).

In addition, the issuance of the land use right under the names of both husband and wife is still slow. According to the latest UNDP (2013) report on women's access to land in Vietnamese society covering 10 cities and provinces representing diversity of economic areas and groups of people, about 18% of women are solely named in the certificates of land use right; the proportion of certificates with

3 According to statistics of the General Bureau of Land Management, 750,000 hectares of land were withdrawn to carry out 29,000 projects in 49 provinces and cities in 2004-2007. Of which, more than 80% is agricultural land and 50% belongs to pivotal economic areas where soil is fat enough to provide two harvests of rice per year (Mai Thanh, 2009).

both names of husband and wife is only 22% while the proportion of certificates of land use right entitled solely to men is double that figure. The most vulnerable women are daughters-in-law and those who live in rural and mountainous areas (UNDP, 2013).

Clearly, although it is stipulated in the law that women have the right to have their name titled on the certificates of land use right, in fact, this right has not been fully executed. Even among women with their land use right are made legally binding, many of them still encounter barriers preventing them from enjoying their legitimate rights. The fact that a woman's name is not included in the certificate of land use right decreases her role in mobilizing land and human resources for socio-economic development. For individuals and in families, this failure to acknowledge entitlement decreases women's roles and positions as users of land for household economic development and does not give credit to them contributions in improving livelihood.

According to the results of the 2011 agriculture, rural and aquaculture census, the fragmentation of agricultural land remains common in Vietnam (Steering Committee of agriculture, rural and aquaculture census, 2011). The scale of rice growing land use of each rural household is quite small. 85% of households use rice cultivation land plots with an area of under 0.5 hectare, and 50% of these households use less than 0.2 hectare. This reflects the small scale of rice production in Vietnam, especially in the Red River Delta and Northern Midlands, the Northern Mid-Central region and the Central Coast. Thus, it is difficult to implement the program

for developing large-scale fields in these regions⁴. The proportion of households growing annual orchards in an area less than a hectare is also high, accounts for 88.3%. The too-small scale of land for annual orchards makes it difficult for the application of advanced technology into production by farmers, in general, and female farmers, in particular.

2.2.2. Credit policy

In recent years, the Central Communist Party and the Government have made efforts to address the financial difficulties of the agriculture sector. According to Decree No. 41/2010/NĐ-CP dated 12 June 2010 on credit for rural areas and agriculture development, credit limits of loans without asset security increased by four to five times from less than 10 million dong/farmer, 50 million dong/farm and 100 million dong/cooperative to 50-200-500 million dong, respectively. Decision 68/2013/QĐ-TTg on the support for loss reduction in agriculture states that households and individuals directly involved in cultivation activities are provided 100% of the interest rate of the loans in the first two years and 50% in the third year, to purchase machines and equipment. The State Bank of Vietnam has issued many documents guiding credit issues in the agriculture sector, including lending for post-harvest loss reduction in agriculture and aquaculture production and the extension of loans for paddy stockpiling.

4 However, the figures of the Mekong River Delta, the country's biggest rice production region, are more optimistic with 87% of the households using land of 2 hectares or larger. This paves the way for the implementation of the programme of large-area field development.

In addition to the credit policies, the State has programmes compensating for farmers' earning reduction due to natural disasters or diseases. These are not long-term programs but provide immediate support such as to farmers who experience losses due to floods and assists in dealing with damages caused by cold weather⁵.

The Vietnamese government also has favourable policies for rural women related to credit access. The National Strategy on Gender Equality in the 2011-2020 period sets several targets, including: The proportion of female labourers in poor rural areas or ethnic minority regions who wish to loan receive preferential capital from employment or poverty reduction programs and official credit sources will reach 80% by 2015 and 100% by 2020 (Target 4, Objective 2).

Capital support activities for women to develop economic conditions and sustainably alleviate poverty are performed through different credit channels which are designed appropriately for each targeted group. For instance, the Women's Union intensifies its support for poor and near-poor⁶ women accessing preferential credit sources from the Bank of Social Policy and microcredit projects directly managed by the Women's Union.

5 For example, Circular No. 187/2010/TT-BTC dated 22nd November 2010 stipulates mechanisms, and policies on supporting seeds, livestock and poultry, fisheries for agricultural production restoration in areas damaged by natural disasters and diseases. Circular No.53/2010/TT-BTC states direct financial aids for farmers discarding the rice fields infected with rice yellow wilt, leaf-curl ateliosis, black-stripe ateliosis as the guidance of the Ministry of Agriculture and Rural Development. According to the Circular, the affected households receive 4 million dong/ha of the rice fields ruined.

6 Based on standard criteria of the Government.

Annually, there are approximately 2.5 million poor women getting loans, accounting for 42% of the total outstanding loans of the Bank of Social Policy and about 450,000 households receiving loans worth total 3.3 trillion dong from the Bank of Agriculture and Rural Development. By the end of 2011, the Fund for Poor Women initiated by the Central Government granted a total of 40 billion dong for nearly 20,000 borrowers who are mainly the near-poor and vulnerable groups such as single women and women with disabilities. After each cycle of loans, about 1,100 women have escaped from poverty (Cited from Website of the National Committee for the Advancement of Women on 22/3/2012). For better-off households⁷ and farms, the credit sources for agriculture and rural development managed by the Bank of Agriculture and Rural Development are identified as the important channels providing capital support for women.

However, there are problems in credit policies for agriculture. First, the conditions for receiving a loan are tough. For example, Decree No. 41/2010/ NĐ-CP stipulates that credit institutions are able to consider providing loans without asset security to their clients who are individuals, households, business households in rural areas and cooperatives provided that these borrowers can submit their land use right certificates. This means the Decree is applicable only for farmers having land or assets as a guarantee.

Second, in comparison to the total credit granted in the whole national economy, credit given to agriculture and rural areas is still low and fails to meet the demand

7 Usually is group of 40% top income.

in these areas. Farmers face numerous difficulties gaining access to formal credit sources; as a result, they are largely dependent on informal credit networks in rural areas (Nguyen Phuong Le and Nguyen Mau Dung, 2011).

Third, gender disparity in accessing and using credit exists. Many studies indicate that compared with men, rural women have few opportunities to access credit (FAO and GSO, 2010). The results from the 2012 Vietnam Household Living Standard Survey also show that the proportion of female headed households benefiting from the credit policy for the poor was 7.4%, 2.3 percentage points lower than of those headed by males. The difference in percentage between female headed households and male headed households as the beneficiaries of this policy, between 2009 and 2012 fluctuated between 1.7 to 3.1 percentage points.

It should be noted that credit access is not necessarily in tandem with changes in gender relations or, the improvement of women's role and position in the family and society. If women gain access to credit but cannot control it, it will be almost impossible for the use of the credit to create resulting changes in gender relations. To control the loan, women need to possess qualities such as: the ability to do economic calculations, a certain degree of business knowledge and experience, skills in understanding loan application procedures and good communication skills, which poor women and ethnic minority women often lack. Therefore, although many microcredit programs have reached these groups they did not help many poor and ethnic minority women get out of poverty (Do Thi Binh, 2008; Dang Thi Hoa, 2013).

2.2.3. Science and technology application in agricultural production

In Vietnam, the state-owned agricultural extension service system, which is organized into central, provincial, district and communal levels, plays a key role. Presently, all 63 provinces and cities in Vietnam have founded their own agricultural extension service centres (or agricultural–fishery extension service centres) administered by Department of Agriculture and Rural Development⁸.

Since 2007 when Vietnam joined the World Trade Organization (WTO), apart from supporting poor farmers to escape poverty, agricultural extension services also support goods producing farmers and better-off farmers apply advanced technology and techniques to improve productivity, product quality, the value of earnings, and, especially, the competition potential of Vietnamese agricultural products in the international market. The State also introduced the policy of fostering learners, providing a variety of training opportunities, including vocational training. Depending on the production scale, producers are subsidized up to 50% or 100% of study materials and travel costs. Women and ethnic minority people are also given priority to be trained to become agricultural extension officers in order to assure women's right in accessing to information and technology⁹.

8 See website of National Agricultural Extension Centre - Ministry of Agriculture and Rural Development.

9 See more details in Article 12, Resolution No 02/2010/NĐ-CP.

Agricultural extension activities bring scientific knowledge and new production methods to farmers, gradually improving their cultivation skills; providing financial assistance, experience and the organization of production; and changing their traditional mindset and backward practices of production which are ingrained in many farmers' minds (Vu Van Phuc and Tran Thi Minh Chau, 2010).

However, agriculture extension programs still have several limitations.

First, there is some trouble related to the content and method of agricultural extension programs. To specify, the main activity in the agricultural extension programs of the State consists of training on crops and is, sometimes, integrated with the development of demonstration models. The broader topics and other related skills such as market analysis, marketing, quality control, microcredit, and the organization of producers' associations are often neglected because the current system is not competent to carry out needed skill building and has inadequate resources to provide the training needed (WB, 2005). Farmers, especially the poorest, need to be able to consult experts on how to choose the key or advantageous crops and livestock suitable to the natural conditions of each region, such as poor soils and occurrence of drought. The farmers also need information on the relative stability of the market at various times but so far, these issues remain unaddressed (To Duy Hop, 2009).

Second, gender gaps are found in agricultural extension programs. In new jobs in the agricultural sector, male labourers predominate over

female labourers. Thus, the latter lose the opportunity to gain access to advanced technologies and contribute to development goals. Unlike the traditional model for developing agriculture, farmers now switch to planting and breeding on an increasingly larger scale, bringing applied science and technology into farm production. These new jobs are often dominated by men of the family. Middle-aged women participate in some supporting work which is not technical and they help sell products (Nguyen Thi Bich Thuy et al., 2009).

Women have fewer opportunities to participate in training workshops on scientific and technical knowledge (Hoang Ba Thinh, 2010). Women mainly learn about technology transfer and the application of new cultivation techniques through hands-on experiences and good examples from their villages (84% of respondents). Only 20.6% of women reported they were instructed by agricultural extension staff and 4.3% learned from newspapers, radio and TV programs (Nguyen Quang Vinh, 2009). Data from the 2012 Vietnam Household Living Standard Survey also shows that the proportion of households headed by men benefiting from the projects in agriculture, forestry and fishing is 8.2%, or 4.5 percentage points higher than that of households headed by women. In the period from 2009-2012, the disparity was between 4.3 and 4.6 percentage points.

Rural women have little chance of gaining access to information and learning about scientific achievements and this causes them to take many risks during marketing the product. For example, many female farmers are often forced by traders to reduce prices because the farmers have

no market information or have little understanding of commerce and do not know well the expected standards of quality agricultural products.

Third, there remain gender gaps in the access to modern machines and equipment for agriculture development. The 2006 Agricultural and Rural Census showed that overall the percentage of agricultural households which owned ploughing machines, tractors, pesticide spraying machines and water pumps was small. The proportion of female headed households which now own small tractors or water pumps is smaller than in the households headed by their male counterparts (FAO and GSO, 2010).

According to the 2012 Vietnam Household Living Standard Survey, the proportion of households headed by men benefiting from machines and materials production support projects was 5.1%, 2.6 percentage points higher than that of households headed by women. There is a significant gap between men and women in the application of mechanization. While a lot of work in the agricultural sector is being mechanized to lighten farming tasks, this mostly benefits men who are in charge of some parts of farm work, such as tillage, harvest, post-harvest jobs, transportation, etc., which are closely related to mechanization.

2.2.4. Some other policies and programmes

Annually, the central government allocates a national budget for programs and projects leading to agricultural development and the improvement of farmers' lives, such as road construction

(inter-village and inter-communal and inter-district), electricity grid expansion, school construction, increased clean water supply, cultural facility development and infrastructure development of industrial clusters in districts. There are especially significant investments in irrigation projects for land reclamation and scientific research on agriculture. As a result, rural infrastructure is continuously upgraded and perfected both in scale and quality; that creates conditions for agricultural production development. For instance, the electricity grid is continuously expanded to communes. About three fourths of communes have developed small irrigation systems managed by communal authorities (GSO, 2012). The rural transportation system developed both in quantity and quality, contributing to attracting investments in rural areas, creating jobs, eliminating poverty and solving other socio-economic problems.

There are several obstacles to the development of rural infrastructure. Roads linking others to rice fields are uncompleted. They are mainly small paths upon which are difficult to use to deliver machines to do work in the fields. The irrigation system has yet to meet the cultivation demand of farmers. This has the most serious impact on female farmers because they are the major labour force working in rice and orchard growing at present.

Regarding support to market access for farmers, the State encourages the consumption of agricultural products through policies about facilitating the linkage of four partners comprising the State, scientists, farmers and

enterprises¹⁰. However, ten years after the implementation of Decision No.80/2002/QĐ-TTg, the connections among the four partners are still loose and a mechanism to coordinate tightly related stakeholders is still absent (Thanh Nguyen, 2015).

Additionally, the sales of fruit crops by contract face numerous challenges. The fruit sales through contracts are very few. The linkages between farmers and markets meet with tremendous difficulties because of uncertain demand, differences in harvest times and problems in harvesting and packaging (Smith, 2013).

Even though there has been no formal evaluation, it is fairly evident that this policy is not gender sensitive. The policy states what the marketing information provision for farmers is, in general, but mentions no concrete measures support for female farmers. Therefore, women's access to market information is less than that of men (FAO and GSO, 2010). The studies show that market information accessibility plays an important role in assisting women in coping with market price issues and obtaining more benefits (Campos and Garner, 2014). The less the access of female farmers to the market information, the more difficulties they face in the marketing of product.

2.3. Climate change

Vietnam is one of the countries which are most severely affected by climate change, especially in coastal areas and deltas. On average, every year, the country faces five or six typhoons in the coastal areas, floods

in the deltas, landslides and flash floods in mountainous areas, and droughts in the midlands. These extreme weather phenomena take place more often due to the impact of climate change and temperature surges and rising of sea levels (Oxfam and UN Vietnam, 2009).

Climate change has serious impact on the livelihoods of people, especially farmers. Therefore, the efficiency of agricultural production is affected and subsequently it leads to seriously adverse impact on the lives of farmers, especially women. Gender analysis results show (UN Women, 2009) that there are gender differences in vulnerability with climate change. Climate change affects women in three aspects: their roles in production, their reproductive roles and their roles in community activities. In production activities, 62% of women work in the agricultural sector while this ratio is 52.2% of men. Most new labourers in the agriculture sector are women. Thus, compared to men, women are more vulnerable to the results of climate change than are men.

To cope with climate change, the government approved the National Target Programmed to Respond to Climate Change dated 2 December 2008. However, the policies supporting farmers in coping with the risks caused by climate change, natural disasters, diseases, and economic crises are ad hoc rather than a long-term strategy in line with the typical Vietnamese climate change context. Meanwhile, the demand for support for recovering the post-flood livelihoods of small-scale production households is very big. This reflects a wide gap between policies and the realities in localities (Le Viet Thai et al., 2011). In addition, this program was seen

10 Decision No.80/2002/QĐ-TTg issued on 24 June 2002 and Decision No. 62/2013/QĐ-TTg dated 25 October 2013.

as gender blind because it failed to identify the differences in men's and women's vulnerability and their difference capacities for coping with climate change as caused by their unequal access to resources. If the government continues implementing this program without concern for gender differences, the program will exacerbate the vulnerability of the victims of climate change, especially women, instead of helping them (Phuong Huynh and Bernadette Resurrection, 2014).

2.4. Some other gender issues

2.4.1. *Gender-based labour division in agriculture*

The 2005 gender equality baseline survey, the 2006 Vietnamese families survey, and several other existing studies present in details the labour division in agricultural production between husband and wife. Accordingly, women undertake primarily tasks like seeding, weeding, and selling products while men predominantly undertake tillage and pesticide spraying. Men and women jointly apply fertilizer and harvesting crops (Tran Thi Van Anh and Nguyen Huu Minh, 2008; MOCST et al., 2008).

Many researchers acknowledge that there is a situation of the "feminization of agriculture" in Vietnamese rural areas because men are involved in economic migration flows that lead to the transfer of all farming burdens to the shoulders of rural women. In those places the hardest work that used to be done by men like plowing and spraying pesticides are now all done by women (Pham Thi Minh Hang, 2010; Hoang Ba Thinh, 2010; WB, 2011; Paris et al., 2010; Nguyen Thi Thanh Tam et al., 2012).

The absence of the male head of a household, on one hand, increases the roles and changes the position of women in decision making related to agricultural activities. On the other hand, it still also puts the burden of house chores and agricultural activities on women's shoulders. Women not only do the work which used to be done by men but also take the position of the household head. A research study by Thelma Paris and colleagues showed that due to the migration of men, the percentage of real female-headed households was 39%, while according to statistics; this figure was only 5-13% (Paris et al., 2010). Thus, along with men's migration to urban areas, there are two trends which develop in the farmers' households at the same time: the feminization of agriculture and the feminization of de facto household head (Hoang Ba Thinh, 2009). Because the remittance from their migrant husband is not high, Vietnamese women usually do all the work which used to be done by men such as using pesticides, tillage and other heavy jobs instead of hiring workers. Even when they get more remittances, women still want to do all the agriculture works by themselves, especially in the case of Northern women (Paris et al., 2010).

Patterns of the gender division of labour are different from region to region. For example, in the Red River Delta and Central region, women are the primary labourers in rice, vegetable and poultry production while men migrate to urban areas to find paid work. In the South, men do 70% of the farming work, including tillage, fertilizing and spreading pesticides, while women do planting and cultivating. The reason is that the scale of land in the Northern and Northern Central regions is smaller than that of the South (from Pham Thu Hien, 2014).

2.4.2. Resource access, management and decision making

Some studies (Pham Thu Hien and Nguyen Thi Huong, 2014) shows that, in a number of agricultural projects, women participate in more activities than men in almost all phases of the project process, but their participation is limited in preparatory meetings, training workshops and model implementation. Women rarely participate in the management and supervision of the projects. Regarding the models initiated by agriculture extension, women participate more in the models for raising livestock and cultivation rather than the models for mechanization application and study tours.

Regarding the projects on developing community activities and projects to support local people's production, there are more men than women participating in the stages of survey design, capacity building and community-based supervision and working as investors or direct labourers. Only in the case of the initial meetings to select community work in the projects do women account for a larger proportion of participants than do men. The reason why women rarely participate in the later stages is that participating parties are mainly officers and other men (from the village to commune levels). There are few women serving as members of the community supervisory boards. The societal perception that this kind of work does not suit women is also a barrier.

Therefore, it is very important to promote women to participate more in the stages relating to community decision making and supervision. The level of access to

productive resources such as knowledge, skills and marketing savvy differs between women's groups depending on the social-economic context of the regions, households' conditions and the sub-sector women are engaged in. For example, time constraints and lower education levels may limit women's participation in training courses offered by agricultural extension centers. Also, social norms may prevent women's access to extension services, for instance, it may be a challenge for women to go to see the mostly male extension officers for advice and instructions (Pham Thu Hien 2014).

2.4.3. Gender awareness of local officials and agricultural business employers

Pham Thu Hien and Nguyen Thi Huong (2014) observed that most officials, especially those who in leadership positions are absent from gender training courses and if they did have the training it was too long ago to remember the lessons. This has a significant impact on the results of gender mainstreaming in agricultural activities.

Research by the International Labour Organization (ILO), Food Agriculture Organization (FAO) and the Ministry of Labour, Invalids and Social Affairs (MOLISA) (2012) shows that most business owners have inadequate knowledge of labour issues and the legal provisions on gender equality. Only 12.1% of the business owners understand the rights of women labourers as defined in the Labour Code. The proportion of those who know about the Gender Equality Law is better, however still remains low (37.6%). About 37.4% of employers still

prefer to recruit men rather women and more than 50% of them believe that men work better than women.

2.4.4. The role of women leaders in agriculture

Research indicates that the proportion of female government officers working in agriculture and rural development at provincial level is less than 30%. There is no woman holding an important leadership position in agriculture and rural development. Research by Pham Thu Hien and Nguyen Thi Huong (2014) in Ha Tinh province showed that the percentage of women holding the positions of heads and deputy heads of departments under the Department of Agriculture and Rural Development is low (22-23%) and they mainly work in supporting positions such as a financial officer. At commune level, female civil servants account for a low rate (below 30%). Most communes have no women holding key leadership positions. In community organizations, the percentage of women in the leadership of agricultural small collaboration groups is the highest (47%), while it is only 23% in cooperatives leaders.

Gender mainstreaming capacity of staff members working on gender equality in organizations or units is limited. Gender issues related to work in cultivation are not fully taken into account in the action plan of the Ministry of Agriculture and Rural Development and some other line ministries.

In summary, the living standard of farming households has significantly improved thanks to the reform policies of the State. The rights and the roles of families as

autonomous economic units in agriculture have been constantly increased. However, many policies to promote the economic development of farming families including the ownership of agricultural land, receipt of loans for production development, training courses, and knowledge extension and information, target the heads of households, who are mostly men. Thus, rural men actually benefit a lot more from empowerment gains in the economic reform process than do women. One of the results is that most agricultural and forestry farm owners are men. Consequently, women are in a disadvantaged position and their role in the development of agriculture and rural areas is much less clear than is men's.

The slow progress of women in the reform process has not only directly affected households' economies, but has also curbed the development of the agricultural sector compared to other sectors because women represent more than a half of the agricultural labour force. A study by the FAO (2010) estimates that the elimination of gender discrimination in access to production resources such as land, credit, machinery, and chemicals can help narrow the current productivity gap of 20-30% between women and men thereby increasing agricultural productivity in the country as the whole from 2.5% to 4%. Currently, women have limited land property rights and less access to agricultural extension services and credit than men, which hinders the potential contribution of women in productive activities while they are also prevented from gaining a better income.

3

Women in Rice Farming and Orchard Growing: Findings from Qualitative Research

3.1. Gender-based labour division in rice farming and orchard growing households

It is prevalent in the surveyed sites that women, especially who are middle aged (40 and older) are overrepresented in rice farming and orchard growing. There are two main reasons leading to this situation.

The first relates to the traditional gender-based division of labour in families. In a context where agricultural land has no expansion option and agricultural activity takes less time now thanks to mechanization and the application of innovative science and technology in agriculture, there is a need for farm families to participate in the labour market of non-agricultural employment. Given

the idea that “women are responsible for home affairs and men are responsible for external affairs”, women become the ones in the rear, undertaking the production of rice and orchards, taking care of children and other members of the family, doing the housework, managing the kinship and community relationships, and if there is any time left, they will work to secure extra earnings. Meanwhile, men go to work to earn money for the family. It is shown in surveyed areas that, in general, the value of men’s labour is higher than that of women therefore men are usually given priority to work outside the household. Husbands are often hired to work in construction or road building projects in their locality or other locations. Normally, only in the households where the husband is sick or weak, does the wife participate in the non-agricultural labour market.

Box 1: Reasons women focus on rice and orchard farming

“Because [all the work] is done by hired labourers, men are not needed much. For example, now we carry rice home by motorbike. Also, tillage and harvesting are mechanized. Since 1998, as a result of economic development, there has been an increase in the number of men going fishing. Women will continue working in agriculture, and at the same time, doing housework and raising children. It is more reasonable.” (FGD, communal officials, Binh Dinh).

“Women work in the fields because of the small farmland area. Ploughing has been done by hired labour, even cutting is supported by machines. With spraying, if women are unable to do it, they will have it done by hired labourers.” (FGD, female, rice grower, Binh Dinh).

Women participate in many stages of rice and orchard farming in terms of time spent because the jobs which are expected to be done by men often occur in a short period

of the year. Thus, men are more suitable than women for other income-generating jobs and often use their extra time to “help” their wife during a busy harvest

time or when women need help with heavy work like spraying or transporting products for sale.

Second, younger women have more chances of employment outside the home than do middle-aged ones because younger women have higher education and more ability to learn skills of new jobs. Younger women also have better health to go for work far from their hometown. Local factories and industrial areas attract a mostly young labour force, female workers in particular (because these factories are garment and footwear producers). Besides, migration trends including exported labour also create more employment opportunities for youth, including young women. *“Mostly, caring for orchards and the rice fields is women’s work. The young group usually works for companies and rents houses near workplaces, with their husbands.”* (IDI, female, orchard grower, better-off, Hai Duong).

It appears to be most appropriate for widows, especially those who are living with young children, to do farming: *“[I] want to find a part-time job to generate income, but it’s difficult because of the burden of housework, farming and the children’s care. The families with both spouses are able to do so.”* (FGD, no husband at home¹, Hai Duong).

With households in which both husband and wife work in rice and orchard

1 Including migrant husband/working away/ husband died/divorced.

farming, the division of labour usually follows the community’s concept, which is based on the biological characteristics and social roles of women and men. Accordingly, men often take on the jobs which are considered to be heavy and harmful such as water pumping (carrying the pump to the field), digging, spraying (aerosol is too heavy for women to carry), and product transportation. Meanwhile, women are supposed to undertake the so-called more gentle and meticulous work such as sowing, transplanting, weeding and pouring fertilizer in rice farming and the pruning of branches in orchard growing. This model of labour division is common in both lowland and mountainous communes, and all our surveyed areas.

Table 1 presents labour division between husband and wife in pomelo/ grapefruit and lychee farming. This model of labour division shows that women take on most of the activities in rice cultivation but only get involved in some stages of orchard cultivation. The stages involving farming techniques are usually undertaken by men.

Explaining the abovementioned model of gender-based division of labour in agricultural production, both women and men in our surveyed sites agreed that women should not participate in heavy work which requires their great effort or in hazardous work affecting their health. This is believed because women are weaker than men and they are not good at using machines; more importantly, their mission is child bearing and rearing.

Table 1: Gender-based labour division in rice, pomelo, and lychee farming in the households having both spouses doing agriculture work

Work	Wife primarily	Husband primarily	Both spouses
Rice farming			
Breed selection			
Sowing			
Carrying rice seeds to field			
Tillage (For large-area field and with machinery used)			
Transplantation			
Weeding			
Tending (fertilizer application)			
Pesticide Spraying			
Harvest (For large-area field and with machinery used) – rice-plucking machine			
Carrying rice home			
Drying			
Pomelo growing			
Seed selection/Marcotting			
Digging/ Planting			
Weeding			
Tending (Female applying fertilizers; male cutting branches)			
Pesticide Spraying			
Harvest (Collect)	Traders harvest at garden		
Sale			
Lychee growing			
Seed selection			
Digging holes for planting			
Weeding			
Tending (Female applying fertilizers; male pruning)			
Pesticide Spraying			
Harvest (Collection)			
Selling			

Source: Synthesised from qualitative data in surveyed areas

Box 2: Some explanations of gender-based labour division

“Transplantation is girls’ and women’s task. Tillage is men’s. Because women can’t manage the plough and harrow; meanwhile, transplantation is a light task for them. Men support by bringing rice seeds and fertilizers to the field because they are strong.” (IDI, male, rice grower, better-off, Hoa Binh).

“For watermelon growing, there is an agreement of assignments according to which the husband oversees the work in the field and the wife takes care of logistics and helps the husband with pruning and rearranging branches. [We do] not allow them to do the spraying because we care for them.” (FGD, male, orchard grower, Binh Dinh).

“Since I figured out that if women are exposed to pesticides, they will be susceptible to gynecological diseases, I have not allowed my wife to work with pesticides, even until now. She can do any work for me, except for those relating to pesticides.” (IDI, male, rice and orchard grower, better-off, Tien Giang).

“Planting watermelon is very hard. I have invested much in it so I must work rather than hire labourers to reduce costs. I do all the housework, as well, I want to do it and not let my husband to be involved. I think he is exhausted with his work and I should try my best so that he has good health for pesticide spraying. If he got ill, there would be no one to do it. I do not know how to spray pesticides.” (IDI, female, orchard grower, medium, Binh Dinh).

The model of division of labour in rice and orchard cultivation is flexible according to family circumstances. Some women said that their husbands have bad health; therefore, the women have to be responsible for all stages of farming activities, including those which are not usually appropriate for women like spraying or transporting fruits to market for sale. In some areas like Tam Quan Nam (Binh Dinh), where a large number of men are fishermen, women have to do all the work and in some difficult cases, have to hire workers to do complete the work. Labour division is also different depending on the type of plant and the specific requirements of each kind of plant. Men play dominant roles in watermelon and coconut farming activities. It does not take coconut growers a long time to care for the trees and men are the pest control people if that is needed. Growing watermelon needs various techniques.

Watermelon is prone to pests and men are at a better advantage to access new techniques.

“My wife totally does not participate in all the work. Watermelon farming works such as spraying and water pumping are pretty heavy for her. For selling activity, if the price is good, I will transport watermelons to buyers by myself. If the price is not good, my wife will help to retail when she has free time.” (IDI, male, rice and orchard grower, medium, Binh Dinh).

However, there have been some changes in the gender-based division of labour in rice and orchard farming. Women are now involved in more activities which used to be done by men, or they are replaced with hired labour, and that contributes to improving their role. An important factor is the mechanization in agriculture, which has contributed to increasing the involvement of women in agricultural

production. For example, *“Previously in the work such as sowing, fertilizing or weeding, husbands took the main responsibility and wives were the supporters. Then with the application of science and technology, namely machines and herbicides, women can now do such work. Many households hire workers.”* (FGD, commune officials, Tien Giang).

Given women’s great contribution, a significant proportion of men have shared housework with women better than in the past. In many families, both spouses usually share by working together. *“Most of our work is shared, like sowing. Work like water pumping or spraying is supported by machines but we prefer doing it together, my husband sprays and I help him. Buying pesticides or fertilizers is my husband’s task since I’m not familiar with these things. We harvest guavas and lemons together.”* (IDI, female, poor, Tien Giang).

In the households from which husbands migrate to work, all the production processes at home are completely done by women. In cases of necessity relating to technical problems or pest attacks, the husband will return home to handle the problems. *“When rice is heavily attacked by insects, my husband returns home for a couple of days to do the spraying.”* (IDI, female, no husband at home, medium, Tien Giang).

3.2. Women’s decision making in agriculture production

There are differences in the levels of women’s and men’s decision making in rice and orchard farming. While women make almost all decisions relating to rice farming such as selection of seeds, fertilizers or pesticides men play a more decisive role in orchards. In Tan Hung (Tien Giang), about 70% of participants involved in training workshops on rice production are women

and they also participate proactively in seed selection or government programs (The Large Field Model, specifically). Men usually make decisions about orchard farming because they are believed to be more knowledgeable, responsive, and receptive than women. For example, for melon growers, decisions are often made by husbands because melons require new farming techniques to which husbands are more receptive. The decision making power is transferred to women only in the cases where men work away from home as migrants or hired labourers. However, in these cases, women still consult their husbands about the work related to cultivation techniques. *“Besides consulting other growers about lemon growing techniques, I consult with my husband, because he has experience from his work for others like spraying or weeding. Even with buying fertilizers and pesticides, I also need to ask my husband about the proper quantity.”* (IDI, female, orchard grower, medium, Tien Giang).

This is also attributed to the traditional gender perception which considers important decisions of the family to be made by men. *“Husband makes all pomelo growing-related decisions. As the breadwinner of the family, he should bear full responsibility.”* (IDI, male, orchard grower, better-off, Hoa Binh).

Things are similar in other work activities. Men are the primary decision makers, especially in large-scale production and commodity production whereas women play the most decisive role in housework, and small-scale production: *“Women are inferior to men in doing business or getting business information. Women mostly stay at home and do agricultural work.”* (FGD, commune officials, Binh Dinh).

Generally, there has been a shift towards increasing women's right to decision making in rice and orchard farming in surveyed areas. One of the reasons is that women's scientific and technical qualifications have improved, so they can

share work with men better. The increasing roles of women in production activities are acknowledged by men since men are as a result less burdened with work. In some families, the wife talks with her husband about farming work only as a notification.

Box 3: Increasing trend of women's decision making in growing rice and orchard

"Such a trend in increasing women's decision making role is encouraging because in that way, women are able to give us a helping hand in production. For example, by attending workshops, women can now recognize different insects attacking the rice fields and discuss the pesticides with me. This has been a big change compared to 10 years ago when she had no clue about this kind of issue; I had to handle it all by myself." (FGD, male, growing rice, Tien Giang).

"Gender equality here has changed in a positive direction. Now women and men share an equal percentage of the number of decisions made in the family (50% – 50%). Presently, it is a trend that women are getting involved in external affairs more than men. You can see more women than men in village parties because women don't drink much while they are afraid men get drunk at a party and cannot do farming. Women also primarily make decisions about family economic issues because women control the household finances." (FDG, male, rice grower, Tien Giang).

One of the reasons for increasing women's right to decision making is that many women are quickly responsive to the changes and adaptable to production and livelihood strategies. Many of them are active in crop conversion which is evidenced by their switch from rice cultivation to cash crops to meet consumers' tastes: "Previously, lacking technical knowledge, we found it much more difficult than now to earn money. For example, failing one business this year, I will convert to another next year. This year I plant lettuce; many growers followed me to grow lettuce so I will change to grow bitter gourd. When many people move to grow bitter gourd, I will move to grow winter melon. If people copy me to plant winter melon, I will switch to zucchini. I will do anything I find effective. If it is not, I will switch to another.

I change the plants consecutively because I follow the market's demand and select to grow the plants suitable to the soil." (FDI, female, rice grower, Binh Dinh).

In some cases, women play a great role because their opinions are proven correct in decision-making process. "Men might have a broad vision while women just look at the realistic things. If the price is good, I will sell immediately ... Several times I let my husband lead the trading affairs, we failed." (FGD, female, orchard grower, Tien Giang).

Not only being good at crop switching, many women also seek additional income from extra nonagricultural jobs. "Previously we grew only rice, but the income was not good. Since 2001 when I

began selling noodle soup for breakfast, my household's economic situation has been better. Now, I can earn more than 2 million dong a month. My husband has been working for the cooperative as an

electricity bill payment collector for almost 10 years. We harvest rice for our daily consumption and the making of noodles. We don't sell it." (IDI, female, rice grower and breakfast sales, medium, Binh Dinh).

Table 2: Primary decision makers about issues relating to orchard growing

Decision about	Hai Duong	Hoa Binh	Binh Dinh	Tien Giang
Plant seeds	Husband Husband knows which branches are good or bad, which can assure the production	Husband Husband knows which branches are good or bad, which can assure the production	Hired and some cases are women	Husband
Cultivation techniques (Fertilizer application, spraying)	Wife Knowledge gained from their attendance in many training sessions.	Husband Knowledge gained from their attendance in many training sessions.	Hired and some cares are women	Mostly hired
Agricultural machines purchases	Husbands decide the production tools of great value (pumps, pesticides spraying machines) because of their deeper technical savvy; Wives decide smaller-valued production tools (hoes, secateurs)	Husbands decide the production tools of great value (pumps, pesticides spraying machines) because of their deeper technical savvy; Wives decide smaller-valued production tools (hoes, secateurs)	Women purchase in consultation with husbands. Husbands decide	Husband decides
Loans for agricultural development	Both spouses	Husbands	Husband initiates the ideas and both husband and wives are involved	Husband and wife
Sale of products	Husbands Husbands are better traders and usually the transporters of clychee for sales	Husbands Husbands have plenty of time to learn the market prices	Husbands for massive market product like watermelon, coconut.	Mostly husband

Source: Synthesised from qualitative data in surveyed areas

Thanks to the development of communication channels and transportation, women are able to expand their knowledge and grasp cultivation techniques like their husbands. Therefore, they become financially independent and their decisive role in the family's economy has also improved. *"Males have lessened their authoritarian attitudes. Previously, when buying something or lending someone anything, the husbands solely decided. Now, they always ask for their wife's opinion in such cases. Gender inequality still remains, but it has been changing gradually."* (FGD, male, orchard grower, Tien Giang).

There are certain differences among household groups in regard to women's roles. Compared with women in the delta areas, those who are from mountainous areas have less power for decision making in cultivation (decisions on seeds, loans, expansion of production and sale of products).

In Hai Duong, the decisions about orchard farming are usually the result of both spouses' discussion. This is partly thanks to the changes in people's awareness of gender roles. At the same time, in fact, women have been greatly trying to affirm their economic roles as well as overall roles in family life. Having access to information and knowledge from training sessions, women now have gained a better understanding of agricultural sector.

"Decision making about the purchase of agricultural supplies is equal between my wife and I. Now with the wide dissemination of scientific and technical information, both women and men can attend training and gain access to the information relating

to the effectiveness of products." (FGD, male, rice and orchard grower, better-off, Hai Duong).

In Hoa Binh, due to the continuation of male chauvinism in some parts of the population, particularly in the Muong ethnic minority group, the participation of women in cultivation decision making is very limited. Men are considered the head of the family and have the right to making most important decision: *"As the head of the family, men will decide on the matters related to agricultural production."* (IDI, male, rice grower, better-off, Hoa Binh). Also, households in Thanh Hoi, Hoa Binh are involved in the process of plant restructuring; therefore, the switch from growing sugar cane to pomelos is important in the economic development strategies of households. Therefore, men are the decision makers of this transition and will play the dominant role in the early years of the transition even though before the final decision, they still consult their wives.

The decision making power depends on each family and the nature of their work. The majority of men will decide on big loans and investment for the work in which they are more proficient such as seafaring. Women are thought to be unable to make decisions on these matters because they have neither enough knowledge nor good health. Women are given the responsibility of making decisions about small credit for small-scale investments in livestock or purchases of fertilizer and pesticides.

4

Factors Influencing Women's Participation in Rice Farming and Orchards Growing



Photo: Institute for Family and Gender Studies

4.1. Land issues

Land reallocation, the regrouping of lands, land use right certificates given to both spouses, and other issues have impact on the rice farming and orchard growing done by female farmers. In the surveyed localities, the regrouping of lands is mainly carried out amongst households. Previously, each person was allocated a *Sao* (360m²) but it was divided into several plots. After the regrouping of land, each area of land is 1-2 *Sao*. Several households, which have good circumstances and want to expand their production, rent land or contract with other households or for access to the commune's agricultural land. Therefore, fallow land almost does not exist. *"My sister and I borrow a Mau (3,600m²) to plant rice and we pay 20 kilos of rice per each sao in each harvest to the landowner. We can keep the remainder for ourselves."* (IDI, female, rice and orchard grower, medium, Hai Duong).

The regrouping of land has been proven to create favourable conditions for farmers developing their production by decreasing travel time, adding an ability to mechanise, and reducing the amount of fertiliser used. The quote below of a female farmer is an illustration.

"Given the regrouping of land, my rice planting work becomes simple. With the land of 3-6 sao, it is easier to use ploughing and harvesting machines. It saves labour. Given the use of machines, I can do such a lot with less effort. The care for plants is easier, too. It is also easy to throw fertilizer equally on every meter of the field. It will be difficult to do so if we do it by hand in such a large area. In the cases where we have had several small plots previously, we needed more fertilizer." (IDI, female, no husband at home, rice and orchard grower, medium, Hai Duong).

However, the transfer and purchase of agricultural land amongst households is not popular in the surveyed areas because rural households want to keep their land. There is a thought that "farmers must have land", thus, renting land is more popular, especially in the watermelon growing area. Needing to grow on new land is a characteristic of watermelon; otherwise they will wither. That's why watermelon growers have to rent new land every harvest.

The regrouping of land depends on mutual exchange amongst households, thus, some households still have scattered plots of land because they cannot find other households with whom to group plots of land. The land distribution pattern is to give each household land with both good and poor soil to ensure equality among farmers, therefore, it is difficult for households to regroup their land. *"The quality of land is different, thus, it's difficult to regroup plots of land. Some households have land in the higher areas while others have land in lower areas. Land is not flat everywhere, it's therefore not easy to regroup."* (FGD, male, rice grower, Hoa Binh).

Therefore, the shortage and fragmentation of land is a hindrance to agricultural mechanization and production development. The cultivated land of each household is just 2-3 *sao* which is too small for farmers to produce crops. However, it is difficult to buy more land: *"The cultivated land is too expensive to buy more; it is 30 million dong a sao"* (IDI, female, orchard grower, medium, Hai Duong).

The conversion of land to new uses when the new practice is not what is listed on official papers makes farmers feel insecure. Almost all households in

Truong Thanh commune have shifted from rice cultivation where they can use the land for twenty years to growing lychee orchards where they can use the land for fifty years; however, they have not been granted a certificate of land use right for the purpose of orchard growing yet. The papers they have are still applicable only to rice growing. Having a certificate of land use right for orchard growing will greatly prolong the period of land use. A long period of a land use right is security for farmers who are actively farming.

“The State should grant the conversion of land used for rice growing to orchard growing; then the period of land use will increase from twenty years to fifty years accordingly. We have shifted our farming but have yet to be issued a certificate.” (FGD, male, orchard grower, better-off, Hai Duong).

The policy of the land use right certificate given to both spouses has been implemented in all surveyed communes, especially to the newly established households. According to Truong Thanh commune’s statistics (Hai Duong), 97% of households have been granted certificates of residential land use right and 99% have been granted certificates of agricultural land use right. The certificates of land use right given to both spouses account for 70%. In Thanh Hoi (Hoa Binh), the local authority has measured the land areas of households in preparation for the issuance of land use right certificates naming both spouses.

Certificate of land use right given to both spouses opens an opportunity for women to gain access to loans for production and empowers women with decision making concerning loans taken for household production expansion. The fact that the wife is entitled in the

land use right certificate does not make men feel less privileged but, instead, they believe that it is a way to protect women’s rights and interests.

However, in surveyed areas not all households are given with land use right certificates with both husband’s and wife’s name on them. In those households in which only the husband or father-in-law is entitled, the wife would face difficulty when she wants to apply for a loan. For example, she needs authorization given by her husband. It is much more complicated in the case when her father-in-law’s name is on the certificate or when the husband household has several siblings registered in the official household book and they want to use the certificate for their loan: *“We have many siblings. My husband parents gave us a part of their land but we are still registered in my husband parents’ household book and the land remains in my father-in-law’s name. My husband’s eldest brother has used the certificate for his loan, so, maybe we cannot use it for our loan application.”* (IDI, female, orchard grower, medium, Hoa Binh).

Besides, a number of women do not understand their rights to access to social resources and equality as granted by the certificate of land use right given to both spouses. Many still believe that the certificate of land use right to both spouses is only useful in the case of divorce when a property dispute occurs.

In short, the impact of new land policies on rice and orchard cultivation and women remains limited. The transfer and rent of cultivated land is still popular in the surveyed areas. The fragmentation of land plots is an impediment to mechanization in agriculture. The process of conversion to new land-use purposes has yet to provide favourable conditions for farmers,

especially female farmers. There are a considerable number of women who are not entitled on the land use right certificates, especially those women who are from the mountainous areas. This curbs women's role in bringing into full play land and human resources for socio-economic development.

4.2. Loans and loan repayment

Presently, there are several types of loans: loans for the poor, loans for businesses, loans for production expansion, and loans for creating new employment/changing job, operated by different banks such as The Social Policy Bank, The Agriculture and Rural Development Bank and The Commerce and Industry Bank. Some localities provide credit especially for women only. Tan Hung commune (Tien Giang) operates a Fund for the Tien Giang Women's Development and Support which offers credit to women. Women's Union members are eligible to borrow 5-10 million dong or more. If their business is efficient, the borrowers can get bigger loans in the next credit cycle. The principal and interest are gradually paid off on a monthly basis so that the loan payment is easier and there are no outstanding debts to the Women's Credit Group: *"Originated by the Norwegian-funded loan provision project, the present "Fund for Women's Development and Support" is able to provide loans worth 1-20 million dong with a flexible payment rate, cycle-based interest payment and membership. In the case that the targeted borrowers from the Social Policy Bank are poor households but they are all elderly people, we will flexibly lend to their children for their production and business."* (FGD, female, commune official, Tien Giang).

Pomelo grower households in Thanh Hoi (Hoa Binh) are offered loans to build

water tanks which meet the local people's needs efficiently. According to people's opinions, these loans are relatively accessible and convenient. However, the information regarding the loan scheme is not disseminated to all farmers. Several respondents in our survey reported that they have yet to access the loan scheme or apply for a loan.

In the surveyed localities, there has been an important change in farmer's perception of loan. Local people have not felt hesitate any more to apply for economic and production development loans. It used to be thought that only the poor needed to borrow money and therefore the other farmers used to hide that they were approaching a bank for a loan. Presently, the borrowers are not only the poor but also other dynamic people who need and desire economic development, more income generation, job creation and productivity enhancement: *"To change one's mind is important. The borrowers are not only the poor but the ones having big expectations and wanting to do big business. Borrowing is a signal of dynamic thinking in production and business. It's good."* (FGD, commune official, Binh Dinh).

The majority of responses from local officials and people asserted that the access to loans is easy, with convenient procedures which meet local people's needs. The amounts of loans have increased, the interest rate is better adjusted and borrowers can choose the payment period. *"Previously, all family members 18 years old and older had to sign the loan application. It is easier now as 2-3 inheritors and a co-owner sign."* (FGD, male, orchard grower, Tien Giang).

"Compared with previous years, the amount of loans has increased according to the needs of different borrowers, the

interest rate is more properly adjusted, and the period of payment can be chosen by borrowers; it is easier for local people.” (FGD, commune official, Binh Dinh).

The diversification of loans makes it easier for all farmers to select loan sources. Women have more opportunities to gain access to micro-scale loan sources (The Social Policy Bank or unsecured loans of The Women’s Union). However, there is a difference between women’s access to credit in the deltas and the mountainous areas. The proportion of

women accessing credit in the delta areas is higher.

According to the commune statistics on the sex-disaggregated data of loan applicants for rice farming and orchard growing development in Hai Duong province, women account for the largest proportion of 68.6% of people who applied for a loan for households’ orchard development. In Hoa Binh province, men make up the majority of loan applicants for rice farming and orchard growing. Women are only 6% of these loan applicants.

Table 3: Proportion of women applicants for loans for agricultural development (%)

	Truong Thanh (Hai Duong)	Thanh Hoi (Hoa Binh)	Tam Quan Nam (Binh Dinh)	Tan Hung (Tien Giang)
For rice growing	-	6.25	80.0	8.2
<i>Total of loan borrower households for rice growing</i>	-	560	350	110
For orchards growing	68.6	4.25	-	3.9
<i>Total of loan borrower households for orchards growing</i>	334	612	-	560

Source: Statistics of communes 2015.

Farmers in Truong Thanh commune reported that the changes in loan regulations (the loan application now needs both spouses’ signatures) empower women better in terms of gaining access to loans for households. Given the land use right certificate titled to both spouses, women are more confident now to try to gain access to loans with security. If borrowing through the Women’s Union, the procedures are simpler and only women can apply. The existence of these

programs creates favourable conditions for women to access loans and to better control their agricultural production.

Women applicants account for a larger proportion of total applicants compared to men because loans are often for agriculture production and women are the main agricultural production labourers in the localities. In comparison with men, women are considered better in terms of using and paying back loans.

Box 4: Reasons why more women apply for loans

“Women are generally using loans. Commonly, women are the main labour and use loans efficiently. Women are better at business, service provision and production.” (FGD, commune official, Hai Duong).

“Women are better at making arrangements and have a good sense of responsibility for debts. Women economize so that they can pay debts on time. Women are also more timid than men and worried about debts and paying on time. When having money, men might spend easily while women are not so confident. They often consider thoroughly earning more from money and saving to pay off debts.” (FGD, commune official, Hai Duong).

“Women borrow and pay loans better and on time. More women are loan applicants because women don’t migrate so it is easier for them to apply.” (FGD, commune official, Binh Dinh).

Microfinance projects are proven to be efficient for women having medium and lower earnings in the agriculture sector. In Thanh Hoi commune (Hoa Binh), a microfinance project for women, the “Credit and Savings Group” model, is implemented in four out of 19 villages with the support of The Center for Environment and Community Assets Development (CECAD). Accordingly, in each village, women are invited to participate in a saving fund group and a project management board is established. When established, a group is initially funded 10,000,000 dong for operation. At the beginning, each group member contributes at least 5,000 dong a month. In the next two years, each member contributes at least 20,000 dong a month. The project has involved more women. Presently, each credit group in a village has 30-60 members.

Depending on the funds of each group and the number of borrowers, a loan is worth from one to seven million dong for a year’s term. In the first two years of the loan period, the borrowers only pay 1% interest. After this period, they have to

gradually pay off both the principal and interest. Women members of these saving and credit groups are able to borrow money and at the same time benefit from the interests from the amount they have contributed monthly to the group. Some of the female farmers who are members of saving groups reported that the saving groups have helped women deal with their biggest economic difficulties. Women often borrow to pay for their children’s education costs and purchase fertilizer.

Yet, in some localities, gender differences in loan access remains. Men are often applicants for security loans while women usually borrow from The Social Policy Bank. The reason is that men are normally entitled to the Red Book (the land use right certificate) so that they can use it as a mortgage for a loan. If the wife applies for a loan, she needs an authorization given by her husband. In addition, women are the daughters-in-law in husband’s family who come from other localities and they are not confident in dealing with paperwork in a new community. The traditional concepts of gender differences remain and have an

impact on farmers' thoughts, especially those of female farmers. Accordingly, husbands are usually the loan applicants because the "husband is more dynamic and good at social relations".

An obstacle to access to loans is the high interest rates of security loans and their short repayment period. In addition, the unsecured loans managed by mass organisations have low interest rates and short repayment periods while people's needs are for medium and long term loans. That is why farmers, including women, are reluctant to apply for a loan. For instance, the policy of the Agriculture and Rural Development Bank is to offer a loan of 50 million dong at maximum, although local people reported that they are only able to get a loan of 30 million dong at maximum; a policy for employment loans allows a loan of 20 million dong in one year. According to farmers, such loans are small in scale and short term so that they are due before any benefits are seen. Loans managed by the Women's Union are just six million dong with the repayment of both principal and interest set at 500,000 dong a month within twelve months. This amount is only enough for two to three fertilizer purchases. The period of a loan should be better in line with the growing period of plants so that borrowers can use loans efficiently and pay back on time. It takes two to three years for the orchards to have the first harvest and five years and more to yield crops sustainably. Therefore, if the loans are short term, the investment in an orchard has yet to show a yield by the time the loan payments are due. *"Several pomelo growers are in financial difficulty. The cost of growing pomelos in the early stage is relatively high. A pomelo tree costs 50,000 dong and a hectare needs 300*

trees. A preferential loan policy is needed for pomelo growing borrowers because it takes pomelo growers three to four years to harvest. Presently, several households grow pomelos on hills. It costs them a lot of cash and labour because they need to level land and find water for irrigation." (FGD, male, orchard grower, Hoa Binh).

"The coconut is a perennial tree so loans should be for five years at least. Three years is too short for there to be a harvest." (FGD, male, orchard grower, Binh Dinh).

Given the high cost of bank loans while the harvests of orchards are unstable and seasonal, many growers and especially women are reluctant to borrow because of the high risks. Some people plan to use savings as the capital for cultivation: *"I need capital for cultivation but I don't want to borrow from a bank because of its high interest rates. I am now saving for it."* (IDI, female, rice and orchard grower, better-off, Hoa Binh).

It is a paradox that people of working age need capital but find it difficult to access loans. At the same time, The Social Policy Bank offers loans to poor households but some poor households, made up of elderly people do not want to invest in production. *"[My] household is poor so that we can apply for a preferential loan. Two years ago, [we] borrowed 30 million dong at an annual interest rate of 0.6% from The Social Policy Bank through the Women's Union. The loan's period is two years and [we] paid off the loan fully last year. Now they are inviting us to apply for a new loan but I'm an old person and if I have problems, nobody will pay [the loan]."* (IDI, female, orchard grower, poor, Binh Dinh). Some poor households who

are eligible for loans lend their loans to others because they do not know how to use the money appropriately.

Generally, female farmers today have more advantages in comparison with those living in previous periods in terms of: access to loans for cultivation, knowledge of methods of loan application, higher loan amounts, better interest rates and the duration of a loan. Female farmers also better control their loans for production now. They are highly appraised in terms of loan use and payment. However, there remain limitations to loan access. The interest rates of mortgaged loans are relatively high and the loan's duration is short. Women have faced more difficulties than men related to mortgaged loans because many women are not registered on the land right certificates. The percentage of women accessing loans in the deltas is higher than in mountain areas.

4.3. Technology application in agriculture

In the last ten years, the development of science and technology has been observed in surveyed localities and illustrated by the presence of an array of machines, including ploughing machines, mowing machines, and rice-plucking machines, and by the diversity of seedlings for both rice farms and orchards. Thanh Hoi commune (Hoa Binh) has implemented the scheme of loans by installments to buy ploughing machines following the recommendation of the Farmers' Association. The loan is 15-16 million dong, which is affordable for a machine. According to the commune statistics, this loan scheme has supported the purchase of seven ploughing machines

so far. Some of households pooled to buy machines. The Employment Support Center run by the provincial Farmers' Association funded the commune to organize a training course on the skills required for repairing ploughing machines, for 25 of the commune's men. The training was to equip participants with skills to deal with technical problems. According to the commune officials, the training was effective and if there are problems with machines, these trained men will repair them or alternatively, farmers will have to have their machines repaired or replaced at high costs by a few of the other servicemen in the village.

The development of technology and machinery has reduced the long time women and men farmers spent at hard labour related to their work in agricultural production. Farmers are now doing farming with the effective aid of machinery; that has created big changes in the kinds of participation of farmer men and women in the planting stages. These changes (e.g., in rice production) are described in the Table 4. The application of technology and science in irrigation has helped save labour costs and time consumption. It also contributes to the change in the division of labour between men and women. Given the progress of technology, local people, especially women are better able to control their production and rely less on their husbands in production. The application of technology has direct impact on the cultivation methods of farmers, but especially women. Women producing rice and growing orchards can now spare time for other work and only need to oversee production.

Table 4: Changes in women’s and men’s participation in rice production with the aid of machinery

	Previous	Present
Ploughing/tillage	Done by men and used buffalos	- Men’s work with the machines on large land plots - Skills of transplanting without tillage (for the land producing alternative rice and pomelos)
Rice planting	- Primarily done by women (women helped each other mutually). - Men helped with carrying rice-seedlings to the farms by bikes or loads	- Women are still the doers but it saves time because ploughing machines are used so the transplanting must be done quickly. The cost of hiring a machine is 120,000 <i>dong</i> per day. - Men help with carrying rice-seedlings to the farms by using machines
Spraying pesticide	Primarily done by men	Women can do it using machines
Weeding	Done by women	Done by women
Harvesting	Done by both men and women	Done by both men and women. They use harvesting machines in large-area fields
Carrying rice home	Mainly done by men. It was a heavy task because farmers had to carry on bikes or loads	Hire a tractor or use a ploughing machine to carry home
Rice plucking	Use simple machine controlled by foot	Use rice-plucking machine

Source: Synthesised from qualitative data in surveyed areas

4.4. Agriculture extension

Training for technology transfer plays an important role in farmers’ agricultural production. In the surveyed areas, training courses and workshops on agricultural science knowledge and techniques were organized through diversified channels. For example, the agricultural extension courses were operated by the district-level Agricultural Extension Department in collaboration with the commune Women’s Union and the commune Farmers’ Association. The local authorities in tandem with plant protection companies instruct farmers on cultivation and

livestock raising as well as advertise and sell pesticide products. On average, there are four to five training classes organized in each surveyed area per annum. The content of the training courses focuses on procedures, methods in how to care for rice and orchards, such as how to select excellent seeds, use suitable fertilisers and pesticides, prevent diseases, and produce fruits with good size, beautiful appearance and delicious taste.

There is a wide range of ways to organize workshops in localities. The local authority in Truong Thanh commune mobilized the local residents to take part in the

training classes. As a result, more than 100 people attended each class. In Thanh Hoi commune, participants are often the leaders of villages or unions, such as, the head of a village, the secretary of a village's Communist Party, the chairperson of the village Women's Union, the chairperson of the village Farmers' Association and the representatives of successful farmers or farmers who engage in large-scale of agricultural production. There were thirty participants in each training class. After the training courses, these participants were expected to deliver information and knowledge to other farmers through the Unions' meetings or communal meetings.

In addition to the training, farmers deliberately seek information via knowledge dissemination programs broadcast on TV. Both male and female farmers believe in and highly appreciate information provided by these channels.

"Besides, I watch the TV programs in which engineers instruct farmers how to plant different crops, such as the "Farmers' Friend" program and I have learnt new and useful information." (IDI, female, rice and orchard grower, medium, Tien Giang).

"Many workshops are organized or a number of programs are broadcast on TV such as the "Farmers' Friend" after which I can directly call to the engineers asking for their instruction." (FGD, male, orchard grower, Tien Giang).

When local women are directly involved in production they are in high demand as participants in training courses and those transferring information and knowledge on technical sciences for planting rice and orchard growing. Technical access is a vital in order for women to be able to be in charge of work which requires more skills and techniques and produces higher productivity.

"Female farmers are engaging with soil and plants every day, as a result, they are thirsty for technical training." (IDI, male, orchard grower, better-off, Hai Duong).

One woman talked about her own and her family's experiences in watermelon production when they lacked sufficient knowledge and techniques. Her family started growing watermelons in 2009. They had a good crop the first year. Therefore, her family felt so happy they rented more land to cultivate watermelons. However, for every year they planted watermelons on that land, the lower yields they got because the melons rotted when they were small. It took her four years to understand that watermelons produce a good harvest only for the first crop on a piece of land. If they want to plant more watermelon crops, they need to rehabilitate the land to make it like "new" for the next crop. The consequences of inadequate knowledge were a four-year bank loan and conflicts in the couple's relationship. *"It has been said that the harder you work, the more difficulties you deal with. My husband and I were in conflict when we had no money."* (IDI, female, orchard grower, better-off, Hoa Binh).

Many farmers highly appreciate the effects of the training courses in which they participated. Thanks to the training courses, they have better understanding of new agricultural techniques and can detect pestilent insects early, then treat the plants in time. *"Agricultural extension clubs in the communes invited farmers to the workshops on rice production techniques in which instructors told us how many days we need to use fertilizers, how many days to use pesticides as well as how to detect pestilent insects so that we can identify them early. I am invited to the classes every month or more. Thanks to the workshops, my rice field has fewer diseases. Previously, I did not recognize*

when the rice was diseased but the instructors showed me how to recognize it by looking at the colour of the rice leaves.” (IDI, female, rice and orchard grower, medium, Tien Giang).

Training methods and content are proposed by farmers who directly work in their fields and supported by the local government and mass organizations. They are of great use to farmers as they gain agricultural knowledge and skills. The Women’s Union proposed several training activities including calculating crop productivity; planting techniques for mangos or the implementation of livestock raising models. In many communes, there are clubs for agricultural extension and gardening. These clubs meet once per month and invite experts from the agricultural department at the district level to teach farmers techniques and skills before they plant new crops.

“The Farmers’ Association assists farmers in developing agricultural production by contacting the agricultural extension department or plant protection companies to instruct and transfer techniques. For instance, the Farmers’ Association operates training classes on livestock raising and propagation. Many farmers know the propagation technique so that they can save initial investment costs.” (FGD, male, communal official, Tien Giang).

Meanwhile, the strategy orientation for agricultural extension activities in the coconut-growing area in Tam Quan Nam is carried out slowly but attracted good investment. The alternative farming models such as planting centella, green coconuts or pepper under coconut trees have brought about economic benefits and helped farmers have stable jobs in their home communes. The local Farmers’ Association assists farmers in organizing technical training courses and the training costs are contributed by participants.

Box 5: Agricultural extension activities

“I took part in the workshops on the methods of caring for coconut trees, using fertilizers, replanting and the rejuvenation of coconut trees, or how to kill beetles on coconut trees. I am the president of the commune Farmers’ Association, thus, after the workshops I often share information and knowledge with other farmers.” (FDG, male, orchard grower, better-off, Binh Dinh).

“When I go to buy pesticides in agricultural material shops, the shop owners instruct me on how to use these kinds of agrochemicals.” (IDI, female, no husband at home, orchard grower, Hoa Binh).

“When I need any information, I just describe the symptoms to the agricultural material shop owners and they will offer me the correct agrochemicals. Besides, I pluck some leaves of the infected trees and bring them to the shop owners; they will know the type of disease and sell the suitable pesticides to me.” (FDG, male, orchard grower, Binh Dinh).

“Farmers ask and learn about experiences from those who have experience already. They are willing to share their experience. For example, they help each other select good kinds of pomelos and offer neighbours good pomelo seeds from their garden.” (FGD, male, orchard grower, Hoa Binh).

The farmers, who do not attend training courses, including many female farmers, learn from agricultural material suppliers and the women's relatives, friends and neighbours, but especially, from the successful producers. Farmers also share with each other experiences in caring for and growing orchards. People who do not know things ask people who do, people producing bad crops ask those with good crops, people experiencing low productivity in their fields and farms ask for help from those who have highly productive fields and farms.

Differences are observed among different women's groups. The opportunities for women in the mountainous areas to take part in training courses on agricultural knowledge are very limited compared with opportunities for women from the delta areas. In Truong Thanh commune, Hai Duong province, the percentage of women attending training accounts for 80% of the participants while the figure in Hoa Binh province is under 50%.

There are two main reasons for this phenomenon. First, as mentioned above, the way of organizing the training courses in the two localities is different. The training courses of Truong Thanh commune are targeted at household members. Because women in this commune are primarily responsible for producing paddy rice and growing orchards while men often go to cities to find a job, mostly women participate in the training classes. In Hoa Binh province, because the Farmers' Association frequently organizes training courses, it directly assigns men, who are its members, to attend. Female farmers attend training classes only when their husbands are busy or absent. Only women have an opportunity to go to the training courses operated by the Women's Union.

Second, domestic chores also hinder women from attending the training courses. Some women reported that they do not attend the training courses

because: *"I have so many tasks to do such as preparing meals, taking care of children, or feeding livestock."* (FGD, female, orchard grower, Hoa Binh).

The training courses do not meet women's needs for agricultural knowledge and skills. Some disadvantages of the agricultural extension programs include:

- The number of training courses on the skills needed for rice production and the prevention of diseases is limited. The number of participants is small.
- The duration of each training course is short, taking from a half of day to a day; therefore, the information provided is general and theoretical. The content of the courses does not reflect local realities such as the characteristics of soils and plants. Consequently, it is difficult to apply the learned knowledge to practice.
- The post-harvest technology, for lychees, for example, is not taught in the curricula of the training courses. Thus, lychee growers are at a disadvantage because lychees have a short life and fast harvest time. If they have no post-harvest technology knowledge, farmers have no choice but to sell lychees at any price.
- There are no training courses for farmers on the marketing, pricing, and selling of fruits.

Gender differences are observed in the participants in training courses in the surveyed areas. Women make up the majority of the participants in the training courses on rice production while men are overrepresented in the technology transfer training classes related to moving to new livelihoods such as shrimp farming and orchard plantation.

"Shrimp farming classes are mainly attended by men. Still, 70% of female farmers participate in agricultural extension training courses because most women don't migrate to urban areas to look for a job." (FGD, commune officials, Binh Dinh).

There are very few pest control measures taken in agricultural production. Farmers passively combat the spread of rodents and pests. What makes farmers worried is that they cannot identify the reasons for the spread of disease or damage to crops. They cannot always tell if the problem originates with the kind of insect, the weather or the quality of pesticide.

“Previously, there were fewer households growing pomelos and there were fewer kinds of pests. Now, there are many pomelo growers and there are more kinds of pests attacking pomelo trees. Growers can’t detect the kind of pest in order to use the proper pesticide.” (FGD, male, orchard grower, Hoa Binh).

Farmers combat pests by spending more time taking care of the trees, sharing experiences with other growers, asking for advice from pesticide suppliers and using agrochemicals. Women have to keep closer track of their crops and pay more visits to their orchards. Worrying about pest attacks, farmers have to visit orchards almost every week or sometimes every day.

It is noteworthy that very few households sought advice and instructions from the commune’s agriculture extension staff. The responsibility of agriculture extension staff in all surveyed communes is to provide local farmers with a farming calendar with a schedule for irrigation and spraying pesticides following the growth cycle of plants. Normally, farmers just need to look at the farming calendar to take care of their farms. However, in the situation where pandemic is spreading quickly and in a complex way, the farming calendar provided by the agricultural extension service is ineffective in helping rice farmers and orchard growers tackle the problems. Up until now, there is very little support given by local authorities and mass organizations to farmer households about preventing pests.

By and large, female farmers have benefited from the application of technology in

rice and orchard cultivation. Along with an increase in cultivation productivity, gender-based labour division has altered positively as women’s role has improved. The agriculture extension service has a significant role in supporting women who growing rice and caring for orchards. Many female farmers consider the agricultural extension service effective because thanks to this service, they are equipped with cultivation techniques and skills used to boost productivity. However, women’s opportunities to attend agricultural extension training workshops are few, especially in the mountainous areas and in the training courses on orchard production. Some training workshops fail to meet the practical needs of female farmers as the courses do not provide strong enough curricula which include all facets of the professional knowledge and technical skills women must have at their fingertips in order to be successful.

4.5. Infrastructure and market access

In recent years, infrastructure, including road and irrigation systems, which support rice and orchard cultivation have been improved greatly and benefit agricultural economic development in surveyed areas. Firstly, cement concrete roads facilitate transportation of agricultural products by trucks, thereby stimulating rural economic activities in the agricultural sector.

Inter-commune roads and inter-village roads were remade of concrete according to the principle of “joint efforts by the State and the public” in which the State invests cement and the public donates land and labour. In terms of rice production, all-weather roads have facilitated transportation of agricultural agrochemicals such as fertilizers from homes to the fields as well as helping carry rice home from the fields in vehicles. The concrete cement inter-commune road networks connecting to the farms also have created favourable conditions for easy

transportation of fruits and also allows outside traders to conveniently reach orchards. Since roads were improved, the price of agricultural products has increased because traders can no longer use bad road conditions as a pretext for squeezing farmers to reduce their selling prices.

Even with the above changes, field-to-field roads are inadequate and limited. There remain a large number of soil and small paths. Field-to-field roads are in poor condition and very narrow in Truong Thanh commune, Hai Duong province, because farmers trim the edges of paddy fields to expand their farms so much that travelling around the fields to plant, care for and harvest crops, becomes awkward.

“Field-to-field paths need to be widened up to two meters so as to allow vehicles to go

to fields to buy agricultural products. Given the current situation of the roads, products now are mainly transported on shoulders or by carry pole.” (IDI, female, rice and orchard grower, better-off, Hai Duong).

There has been also progress regarding the irrigation systems, particularly for the watering and drainage of rice fields and orchards. In order to help farmers solve the difficulties in watering and drainage, the local authorities approved a policy which brings power free of charge to the field for farmers’ pumping and watering in Tam Quan Nam commune, in Binh Dinh province. Although the electric cables do not cover all plantation areas except in rice-growing areas, the free lines are an advantage for farmers as they irrigate their paddy-rice fields.

Box 6: Effects of an irrigation system on rice farming and orchard growing

“There are three paddy rice crops per year. Water is pumped every few days. Power lines are brought to the fields by the local authority, then, farmers just carry their water pumps to their field to water paddy rice.” (IDI, female, no husband at home, rice grower, medium, Binh Dinh).

“Since having power and some related machines, farmers’ production activities become more beneficial. For example, thanks to the electricity-using watering system, farmers just stay on the edge controlling the pump and waiting for one hour to water the farm instead of wading across the canal for hours.” (IDI, female, rice and orchard grower, medium, Binh Dinh).

In Tan Hung commune, the dike system enables farmers to increase from two rice crops to three rice crops per annum. As a result, households’ economic conditions become more stable.

“We used to plant two rice crops per annum but since 2010 we have produced three crops per annum thanks to having a dike system. Thanks to that, our income is more

stable. Before we had the dyke system, the fields were flooded for a few months, thus, we produced only two rice crops.” (IDI, female, rice and orchard grower, medium, Tien Giang).

However, the irrigation system does not work well in some rural areas. The canal system is not well- invested and that causes a water shortage and later floods

when it rains heavily. This markedly affects households' agricultural production. In Truong Thanh commune, Hai Duong province, the local residents reported that the land leveling had a negative impact on the existing canals. In Thanh Hoi commune, Hoa Binh province, the irrigation system has not been completed, and it is severely damaged by rodents.

In addition, the concurrent production of rice and orchard crops has led to conflicts over water supplies for both crops. In Truong Thanh commune, Hai Duong province, the respondents reported that lychees are the main local crop but the orchards are not provided enough water due to priority use for the water pumping schedule for rice plantations. In Thanh Hoi commune, Hoa Binh province, farmers noticed that the local government did not adjust the canal systems to meet the needs of three coexisting crops including sugarcane, pomelos and paddy rice. Water supply distribution between cultivation and livestock activities is unreasonable. Sugarcane and pomelo producers in the upper reaches often take much water for irrigation; consequently, water does not reach the areas for rice planting or orchards that are at the other end of the water source. In response to the water shortage, farmers have to build their own water storage systems and water pipes.

On the positive side, there are some highlights in successful marketing activities in the surveyed areas. Farmers now get involved in all stages of marketing, from growing crops, production resources, tending crops, to consumption and selling products to buyers.

At the initial stage of the crop, farmers access the market directly to select seeds and recruit tillage labourers. For rice, farmers often select pure breeds to ensure crop yield and minimize pests. For coconut trees, some households invest in Siamese coconut trees to replace the

trees damaged by insects or windstorms. For watermelons, households also choose seeds introduced by agricultural companies. The farmers also ask for advice from their relatives or friends and sometimes grow crops experimentally in a small area.

Market mechanisms offer farmers opportunities to gain access to farming materials and agrochemicals like fertilizers and pesticide. The private dealers are very clear-headed in grasping farmers' needs. They offer farmers credit and post-harvest interest when buying their products. Although some argued that the interest rates applied by dealers are too high, the majority of respondents reported the benefits of the purchase on credit offered by agricultural material dealers. When they can delay their payments, farmers can invest more in rice production. Previously, farmers could buy fertilizer only when they had money so plants were not fertilized as much as they needed. Given the purchase on credit offered by agricultural material dealers, farmers are able to put fertilizer on their plants according to their growing stages and related to the amount actually needed and number of times for fertilizer use.

In Thanh Hoi (Hoa Binh), the commune Farmers' Association acts as a guarantor for local farmers purchasing agricultural materials on credit. Accordingly, farmers register the amount of fertilizer they need with the local Farmers' Association, which will work with dealers in terms of setting prices, delivery and the interest rates on credit given. However, many of local households do not use this channel for purchasing because if they purchase directly at the dealers, farmers can be offered some delay in paying the interest and with same interest rate. Given a purchase with the guarantee of the Farmer's Association, farmers can ask for a payment delay only once before the crop is harvested. They cannot ask for more delays after harvesting their crops.

It is an emerging issue now that farmers are worried about the quality of agrochemicals, especially pesticides and fertilizers. The respondents in Truong Thanh commune reported that during the 2014 lychee crop, although they used a lot of pesticides and the interval between sprays was short, lychee fruits were wormy. In Thanh Hoi commune, although farmers had sprayed pesticides, the rice contracted a fungus. The phenomenon of fake and low-quality fertilizer and pesticide is prevalent, having an impact on productivity and making several farmers become financially depressed.

The high price of fertilizers and pesticides is a difficulty for farmers. In the context that the prices of rice and fruit products fluctuate continuously, it is a burden to farmers.

Farmers are totally responsible for product marketing and trade promotion for their products. In Thanh Hoi commune (Hoa Binh), the prices of pomelos were decided by farmers based on what they learned about the common market price. An advantage in this province is that it is the home of the new variety of red pomelo and the demand for this kind of fruit was very high. Thus, in 2014, farmers had successful red pomelo harvests.

Box 7: Opinions on the quality of agrochemicals

"It is pesticide so we can't taste to detect if it is fake or real. The quality is controlled by no one so we don't know whom we should believe. We just buy it at the dealers, nobody tests it." (IDI, female, rice and orchard grower, medium, Hai Duong)

"There are too many companies while the quality and prices are not monitored. There are many prices for a kind of fertilizer. The same with pesticides. A well-known company sells it at 190,000 dong. A newly-established company sells at 120,000-130,000 dong. We just know about the quality when we use it and we can't claim compensation." (FGD, male, orchard grower, Tien Giang).

"I used to grow sweet mandarins with high productivity but when using fake fertilizer once, the fruits rotted. I brought the fake fertilizer back to the shop and the seller told me that it was imported from China. They didn't know it was a fake product. We just knew about the quality when we used it. We reported to the sellers and they acknowledged it but they didn't compensate us." (IDI, male, rice and orchard grower, medium, Tien Giang)

Farmers are also proactive in finding ways to promote the sale and brand of local crop varieties. For instance, pomelo growers in Thanh Hoi developed their own website to introduce their products. In Tam Quan Nam, the household of a former commune official learned to produce bran and coconut inlay products from Ben Tre at their own cost and cooperated with many other producers to export their products.

Watermelon growers in Tam Quan Nam sell not only in the local markets but also to dealers from Hanoi and Hai Duong. The price of watermelon in the first months of 2015 was only 1,500 - 2,000 dong/kg for traders who buy at the field but farmers sold at 5,000-6,000 dong/kg when they carried watermelons to sell in Hanoi. In this way, except for the cost of accommodation and transportation which was 1.6 million

dong/ton of watermelons, farmers earned better profits. By exchanging and sharing experiences about seeds and watermelon growing techniques, growers have created a relatively cohesive association.

However, in some places, farmers are absolutely not able to set prices and are dependent totally on individual wholesalers. Despite low prices and suffering from losses, lychee growers in Truong Thanh (Hai Duong) had to sell to wholesalers because this fruit requires painstaking preservation and a well-timed harvest or otherwise they become putrid.

“We just know the price of today. Even if it is reasonable, I still have to sell because there are no other traders. For example, it is 20,000 dong/kg in the morning but it could very possibly be at 5,000 dong/kg later. We have to sell because the fruit has been picked and will spoil shortly.” (IDI, female, orchard grower, medium, Hai Duong).

The current rice selling has the same problem. If people dry rice themselves, it is very likely that they will also get irregular old grains and low-grade rice. Now with drying technology, grains can be dried easier, so traders can purchase right in the field, collect and resell to processing factories to dry in high-capacity ovens. Therefore, the products are better in quality. However, farmers now will have no opportunity to negotiate the price because when selling wet rice, the more time people delay, the more disadvantaged they are. With the current large amount of rice, the farmers’ ability to dry and stock for retailing is limited and that explains why they are often pressured by traders to accept lower prices.

“Now people are forced to sell rice. They don’t dare to hold back due to the impossibility of drying it. The large output also can hardly be retailed.” (FGD, male, rice grower, Tien Giang).

Some communes have centers purchasing rice for export but these centers do not buy directly from farmers but through traders, so farmers fail to benefit from the floor price of rice. The policy on purchasing rice for temporary storage is also inconsistent with the farmers’ seasonal calendar. For example, in Tan Hung (Tien Giang) before the purchasing volume was published, people had already completed the harvest and sold the products so they were excluded from the benefits which followed that publication.

“Right in the period of policymaking, people in this area have already sold products at low price. The government’s intervention seems to not to come at the right time because only after people have claims about the low price does the government make decisions to purchase the rice.” (FGD, male, rice grower, Tien Giang).

Many people do not even know much about two policies: 1) regulations about the floor price; and 2) the procurement policy for temporary storage of rice. Women are less aware of these policies than men. Since farmers do not know how to take advantage of them the current policies have failed to bring them benefits.

“I’ve never heard of the procurement policy for temporary storage of rice. To date I have always had traders purchased my products and never heard of the procurement policy, let alone the floor price policy. I had a small quantity of rice, so I just followed other farmers, selling at the same price, barely knowing anything else.” (IDI, female, no husband at home, rice and orchard grower, medium, Tien Giang).

Coconut trees are one of the main plants in Tam Quan Nam (Binh Dinh); however, people still have to find outlets for their products by selling to agents purchasing coconuts. The price of coconuts totally depends on the traders: *“Even the chairman of the commune also sells*

coconuts to traders without any support” (IDI, male, orchard grower, better-off, Binh Dinh). The coconut farmers, although they have shared experiences on how to tend and grow coconuts, they hardly share or discuss prices and market expansion of coconut products as a group. Meanwhile, traders have had “consultations” with each other on the prices before they work with farmers, so the latter are totally passive related to the price. Since traders have huge capital, they may help coconut growers to buy supplies, or lend them money prior to the harvest. Until the harvest, it will be these traders that farmers often sell products to, not others. This is the principle called by some as “faithful to customers”. The psychology of it being a “small amount” is also one of the reasons why farmers are “faithful to customers” because normally there are about 200-300 coconuts to harvest, which is not enough to encourage a farmer to change loyalty and deal with other traders. The prices of lemon trees and guavas that many households in Tan Hung (Tien Giang) are growing are also unstable and totally dependent on the needs of the market and traders’ decisions.

“As the granaries are near our house, if it is time to harvest, we will harvest. How much they pay, we take it thoughtlessly, with no bargaining. Traders totally decide the price of guavas. Once, I heard that the price of guavas is 3,000 dong/kilo at the granary, but traders only pay 2,800 dong/kilo because of the decreased price of guavas in markets, as they explained, and farmers have no choice but to trust and follow them.” (IDI, female, orchard grower, medium, Tien Giang).

One of the reasons that people are forced to give in related to prices is that they lack information about the market. Commune authorities have agriculture support officers, Farmers’ Associations, and many other socio-political organizations but there have been virtually no specific

activities to support farmers to access the market in ways to achieve profitable sales.

“Farmers only know how to do the gardening, how to apply fertilizers...but fail to know any market information. How much they (the traders) pay, farmers still have to accept it.” (FGD, male, orchard grower, Tien Giang).

The passivity of farmers related to improving the benefits to them of product selling is also a major barrier. In the harvest seasons for rice, coconuts, watermelons, lemons, guavas, a majority of people wait for traders to come and purchase locally, or at home, in the garden. The farmers seldom prepare outlets for products in advance. In their mindset, the concept of market access and product processing as a commodity remains rather ambiguous.

“The sale price of rice fails to reach the floor price. When we paid a deposit, they (the traders) did agree to use the floor price set by the government. However, after harvesting, they paid cheaper rates because they were unable to sell that much. Therefore, I had no other option but to accept. The government has a regulation on the floor price but the private traders do not follow it.” (FGD, male, rice grower, Tien Giang).

However, it should be noted that the information exchange among farmers has improved, especially through the group talking and discussion.

“Working together, we often ask our partners for their own experiences. If her field has any problem when she is somewhere else, we will tell her so she can handle it. Besides, we learn the production experiences through several associations such as the Women’s Union and Farmers’ Association.” (FGD, female, rice and orchard grower, Binh Dinh).

“We sit for a drink and exchange experiences with each other. On hearing that the price rises, we will tell each other. My friend in

Hai Duong also informs me of the melon price there so that I can decide whether to bring (melons) out for sales or not.” (FGD, male, orchard grower, Binh Dinh).

There are differences between men and women in the selection of places at which to exchange production experiences. Men usually exchange ideas in their daily encounters while women primarily exchange experiences through official events.

“It is easy for mutual support because in the morning or afternoon men usually gather to drink tea and discuss production experiences. Women exchange mainly through agricultural extension seminars, group meetings.” (FGD, male, rice grower, Tien Giang).

In terms of gender related realities, the current sales method is more convenient for women. For example, in Tam Quan Nam (Binh Dinh), from 2010 to 2013, the families often asked traders to pay the price right in the garden, or the spouses sold melons together, or with some household retailing in markets the wife would be the main person in charge. However, in 2014 and 2015, families often hired trucks to transport melons to Hanoi for sales and the husband played the major role. For orchards, previously, it was women who usually picked and sold. That traders now come to the garden to buy has helped women save time and labour. Some men have stated that “women now are eight times happier than before”. Especially, for households with husbands working away from home, to have traders coming to the garden to buy is much more convenient for women and saves them money on transportation.

“I called to ask them how much lemons were. They said they were 10,000 – 12,000 dong/kg. They asked me if I wanted that deal. If I agreed, they would go to my garden to collect and transport (the fruit)” (IDI, female, orchard grower, medium, Tien Giang).

4.6. Climate change

Agricultural production depends greatly on weather conditions and climate. Therefore, the changes in weather conditions and climate such as too much sunshine or heavy rain might be good conditions for the growth of pests and insects harmful to plants. Orchard growers in Truong Thanh (Hai Duong) had a lychee crop failure because of the prolonged monsoon, high humidity and drought in the beginning of 2015. Some households do not have sufficient water for their orchards and witnessed their plants being burnt up. At Thanh Hoi (Hoa Binh) in 2014, farmers had a good pomelo harvest thanks to the pleasant weather. However it is anticipated that this year pomelo growers will have a bad harvest. The yield is expected to be only 30% of that in 2014 because acid rain occurred when the pomelo trees were flowering. The growing of watermelons also depends on the sun and rain.

“Sunny weather will make the watermelons more delicious. If it rains, the root of watermelon can be waterlogged to death. Hence, many women have to grow vegetables for additional earnings.” (IDI, male, rice and orchard grower, Binh Dinh).

“This year growers had a bad watermelon crop because of harsh weather and low prices. Watermelons have been exposed to saltwater rain which blasted the melon leaves. It is estimated that I have lost dozens of millions of dong this year.” (IDI, female, orchard grower, medium, Binh Dinh).

In fact, farmers are still very passive in coping with climate change. They are not equipped with the adequate knowledge or skills to deal with climate change. The acid rain in Thanh Hoi (Hoa Binh) is a telling example. Farmers were not warned of the acid rain and did not know how to protect their orchards from it. Only after watching news about the rain on television did they know it was acid

rain. They phoned up to channel VTV2 to ask about prevention measures, but it was too late at that time for them to apply this knowledge to their farming.

The fluctuations of the weather have the most effects on female farmers because they are the major labour force in cultivation. The time women spend in agriculture is lengthening and, thus, their work time schedule has to change. Currently, women start their farming work earlier in the morning and finish later in the afternoon to avoid sunlight.

Although natural disasters might always cause farmers difficulties in cultivation, support policies compensating them for catastrophes are inadequate. Presently, direct support programs to compensate for farmers' reduced income due to natural disasters and epidemics apply only to rice growers and the support levels remain low as assessed by the farmers, at five kilograms of rice seeds per three *sao* of farmland. Orchard farmers have not had any assistance for lost crops due to natural disasters.

"Since transitioning to orchards, there has been a period of floods and storms which made many trees die. We did report our loss but there hasn't been any support yet. Lychee growing is an agricultural production but it is not supported yet." (IDI, male, orchard grower, better-off, Hai Duong).

Generally, female farmers' cultivation is seriously influenced by the changeability of weather while they have deficient knowledge and skills to deal with the results. Presently, the policies supporting cultivation are inadequate to meet farmers' needs.

4.7. Household and individual characteristics

Rural-urban migration and the characteristics of household and individual women such as their inferiority complexes, limited life skills, a low level of household wealth, and their roles in the household as caregivers and housekeepers have important influences on female farmers' agricultural activities.

Currently, migration is one of the economic development strategies for many farmer families in surveyed areas. Both men and women are included in these migratory flows, but men are overrepresented amongst migrants. Most farmers are seasonal migrants. That means they are not completely separated from agricultural activity and often return to support their families in the rice transplanting and harvesting seasons and orchard harvesting seasons.

It is common in our surveyed communes that women are the primary labourers in agricultural production when their husbands work far from home. The work which was not normally assigned to women, such as spraying and transporting of crops are then all carried out by women. *"If my husband is at home, he will go to weigh the lychees. Otherwise, I will do it, all by myself."* (FGD, female, no husband at home, Hai Duong). The working hours of women having migrant husbands are longer than normal. Clearly, lacking a helper in the harvest season, women have no choice but to wake up earlier and stay up later. *"I go out to the orchards as soon as I wake up. Waking up at 3 a.m., I go to work at 3 a.m. Waking up at 4 a.m., then going to work at 4 a.m., and not dare have breakfast. I harvest lychees until 9 or 10 a.m. I was so hungry that I was shaking all the time, even when saying this."* (FGD, female, no husband at home, Hai Duong).

Many women contrive to complete the agricultural work without hiring extra labour because according to them, there will be no profit left if they hire labour with their current income from agriculture. *“Raising children, spending on community affairs such as neighbors’ weddings and anniversaries, I find that the money he sends home is not enough to pay for helpers. I will have to try my best to complete the farming alone since there will be nothing left if I spend his money on hiring labour. Except for some work that I am unable to do like spraying or ploughing, I will resort to helpers.”* (IDI, female, no husband at home, rice and orchard grower, medium, Hoa Binh).

Women whose husbands are migrating to look for nonagricultural jobs are in disadvantaged positions related to their ability to sell products: *“Families with many members will harvest faster; and as a result, will have products sent to market earlier. I do it by myself so it’s slower. When I bring my fruit to market, it’s late. Wholesalers have almost completed their purchases and they will buy my fruits at lower prices.”* (IDI, female, no husband at home, orchard grower, medium, Hai Duong).

The absence of men at home because of migration also has certain positive impacts on their households in general and on women in particular. The most important benefit for the migrant households is the economic value. Depending on the nature and stability of the migrant’s job, the remittance is from three to five million dong per month on average. These remittances are often used for daily expenses, education fees and supplies for agriculture. Some of households also spend it effectively on agricultural development such as for hiring labour, purchasing fertilizer, and renting or purchasing machines for production.

“The money my husband sends home helps me cover the expenses of household chores and agricultural production such as buying seeds, pesticides, and fertilizers...”

which makes me more proactive in rice and lychee farming without having to get loans.” (IDI, female, no husband at home, rice grower, medium, Hai Duong).

Another positive impact of migration on women is that women are better able to control and make better decisions on agricultural production. Women in husbandless families decide everything concerning rice and orchard farming on their own, including fertilizer and pesticide selection.

“Being dominant in making every decision without conflict or contradiction, I can be free to do what I would like to do. Many spouses go to field work together and different viewpoints lead to their conflict affecting the production activities.” (FGD, female, no husband at home, Hai Duong).

“It’s I who decided to borrow rice fields. When I proposed it, my husband did not agree for fear of strenuousness which can affect my health, resulting in my neglect of the children. But because he was absent, I kept doing it. I said, only two acres of lychees is not too much. Moreover, finding that there was a good rice field in the neighbouring village that many people do not want to use, I asked to rent it. My husband, on finding that I can still do the housework as well as care for the children, had no disagreement.” (IDI, female, no husband at home, rice and orchard grower, medium, Hai Duong).

The psychology of women’s dependence on husbands and of inferiority has constrained women’s transactions in production activities, especially in ethnic minority communities. In Hoa Binh, most of the activities relating to loans and participation in training are usually performed by men.

“I want to rely on my husband. Stepping into banks makes me feel like being imprisoned, shaking like a leaf.” (FGD, female, no husband at home, Hoa Binh).

“I dare not go to banks as I will have to fill in the forms with letters. If I was a borrower and unfortunately our business failed, my husband would blame it all on me.” (FGD, female, rice grower, Hoa Binh).

Limited life skills also make it difficult for women in the production process as well as in life. For example, the inability to drive leads to their dependence on husbands, because it will be much harder for them to cycle a longer distance. They will also have difficulties in buying pesticides or joining the training and selling products given the fact that the training courses are often organized in the commune, even in districts, or pesticides are sold in the commune or district center.

Family living standards have significant impacts on the performance and cultivation strategy of households. Firstly, the use of fertilizers and pesticides depends on the economic circumstances of each household. Households with affluent economic conditions can afford better and enough fertilizers for crops growing at the right time. Households without

economic conditions will purchase fewer, sub-standard products or purchase on credit and pay up after the harvest, which will carry certain interest rates. Second, those with higher living standards have more opportunities to expand cultivated areas than households with lower living standards. In particular, farmers are still hesitant to take mortgage loans because of concerns about the risks they may encounter in cultivation.

In families with children and elderly parents, women will have to spend more time on caring activities. That means that they will have less time for other activities such as participating in training and other work. In single-parent households and divorced or husband-migrating households women suffer and struggle a lot. Their ability to care for their own health and that of other family members is also affected because women often have less time and poor economic conditions. With widowed and single-parent households, the difficulties are multiplied given the fact that the entire capital of the family now rests only on the women’s shoulders.

Box 8: The difficulties for women with no husband working at home in rice farming and orchard growing

“My husband works in the construction field, always away from home. I have to manage everything alone. Things became particularly difficult at the peak of the harvest when I have no one by my side to support me.” (FGD, female, rice grower, Binh Dinh).

“The income from the previous year’s guava harvest is about five to six million, partly because there is only me to do the spraying and apply fertilizers, which can never be as profitable as in households with husband.” (IDI, female, no husband at home, orchard grower, medium, Tien Giang).

“My husband died, my mother-in-law has been paralyzed for five or six years, and I have no choice but to shoulder everything.” (FGD, rice grower, Binh Dinh).

In short, regardless of the impact of agricultural policies and programs, female farmers’ cultivation participation is closely related to the rural-urban migration status, their educational attainment and life skills.

The household wealth status and their role as the primary caregiver in the household also have an effect on the extent to which women are involved in rice and orchard cultivation.

5

Emerging Issues and Policy Implications

The reforms in land policies, the agricultural restructuring programs, and the new rural program bring favourable conditions for female farmers in agriculture production development. The issuance of the land use right certificate to both spouses helps to affirm women's right to land property and acts as security for women's access to loans. It also amplifies their voices in the decision making process in the household's agricultural activities. The mechanization in the agricultural sector, which is represented by the use of agricultural machines for ploughing, plucking, harvesting, and pesticide spraying mitigates women's labour burdens in cultivation. The application of machines offers women more time to rest and participate in additional jobs which generate more income. Family members and communities highly value women's roles and participation in rice farming and orchard growing. The construction of roads facilitates the transport of farmers' products.

However, in practice, men rather than women in rural areas are the key beneficiaries of the economic reforms. This reality still obstructs women's potential contribution to the agricultural economic reforms, particularly in farming activities. Below are some of the major challenges that female farmers in the rice and orchard farming sectors face and the policy recommendations.

5.1. Some major challenges to women's participation in the rice and orchard farming sectors

- Women are the primary labour force in the agriculture sector. Still, the income per capita of agricultural workers including women remains very low. Earnings from agriculture, such as rice farming and orchard growing cannot support farmers'

households. Changes in this reality require effective measures that ensure a stable and affordable income for farmers. Although women are overrepresented in the agricultural labour force, their participation in orchard farming, which is considered to have more advantages in productivity and economic benefit, is limited in comparison with men.

- The small scale of agricultural plots and their fragmentation lead to the failure of women to perform to their full capacity in farming activities. Women's access to and ownership of land is to a smaller extent than that of men, especially those women who live in the mountains. This reduces the power and affects the agricultural roles that women could have in land and human resource mobilization for socio-economic development.

- Credit conditions are unfavorable to women, particularly because the requirement of the possession of a land use right certificate with their signatures on it makes female farmers largely dependent on informal sources. Compared to men, rural women have less access to credit and less power over control of loans. This is attributed to their lack of understanding of the loan application process.

- The pattern of farming in ways based on personal experience and custom remains prevalent among many households. The combination of the so-called four partners of farmer, state, scientist and distributor working together in cultivation of specialized agriculture is limited. Women have few opportunities to participate in training sessions which transfer needed scientific and technical knowledge and information and so stand little chance of becoming

skilled in those areas. As a result, they end up dealing with many risks during agricultural production.

- Although much work in agriculture is mechanized in order to mitigate the work burden of farmers, the benefits from this mitigation are mainly for men who are responsible for work relating to land preparation, harvesting and post-harvest, transportation.

- The market-led economy leads to a new diversity and accessibility of seeds and seedlings and fertilizers and pesticides for farmers. However, the free access to the market and all farmers' inadequate knowledge of clean agricultural production are issues of concern. The overuse of fertilizers and plant protection products has negative impacts on productivity, the quality of agricultural products, and the farmer's health, especially for women. The absence of linkage and support measures among farmers, related to product selling, make farmers disadvantaged in negotiating fair prices. The policies on market access mainly support providing general information about the market to farmers and have not contained any specific measure to support women.

- The extent to which female farmers get access to resources and make decisions about work is lower than for men. In farming activities or agriculture projects, women may participate in the meetings about deployment of work, training, work implementation and hardly ever get involved in the managing and monitoring stages of agricultural work. Similarly, in the agriculture extension models, women engage more in livestock or planting models and less mechanized ones. This has limited the effectiveness of women's planting activities.

- The "feminization of agriculture" as a result of a large number of male farmers migrating for non-agricultural work places the burdens of farming on the shoulders of female farmers. Women today not only take on the traditional farming work as sowing, transplanting and weeding, but also undertake work which used to be designated only as men's work such as plowing, fertilizing and spraying. This now increases the pressure of agricultural work on women.

Women are vulnerable to consequences of climate change and inferior to men in their ability to cope with climate change, in three roles: 1) in production; 2), in family work; and 3) in community activities. This can lead to economic harm because of planting productivity may not succeed as expected.

- The traditional gender prejudice toward women's roles in agriculture production remains strong amongst a number of women. Many female farmers have inferiority complexes and depend greatly on their husbands. Women, thus, fail to fill possible roles in leadership and management in the agricultural sector. This results in obstacles for women who need to learn and exchanging experiences about cultivation. The general awareness of local officials and agricultural business owners, particularly men, is not high.

- There are differences between geographical regions as well as between family types related to the level of the participation of female farmers in planting activities or the level of access to production resources. For example, female farmers in families with husbands migrating or female farmers having higher educations play bigger roles in the cultivation process. In the Northern Delta and the Central region,

the proportion of women in the main labour force in rice and orchard farming is much higher than in the Mekong Delta because of the higher proportion of men in the North and Central regions migrating to urban areas to look for employment.

5.2. Policy implications for female farmers and inclusive growth

Land issues

The issuance of the land use right certificate to both spouses and have appropriate duration of right use in line with growing cycle of crops should be completed in a timely fashion. A study is needed to scrutinize the implementation of land regroupings to make this practice efficient and reflect the characteristics of the quality of soil in each locality.

Loan issues

Credit granting policies should raise the loan amount and lengthen the period before repayment is due, in keeping with the farmer's production cycle, especially for orchard production. It is proposed that the Bank of Agriculture and Rural Development provide loans with preferential interest rates for the near-poor and medium households on the basis of evaluating their loan use plan. This effort to create favourable conditions for more farmers to develop their crop cultivation would be a positive change. The information relating to loans, application procedures, and schedules should be disseminated to all farmers on time, as required by law, but especially to the households most urgently in need of loans.

Some immediate measures should be implemented to facilitate female farmers'

access to secure loans without considering their entitlement, or lack thereof, in the certificate of land use right.

There should be a preferential policy on granting loans to individuals and households who are changing crop or developing crop varieties.

The application of science and technology to rice farming and orchard growing

The linkage between scientists and farmers in the agricultural sector should be strengthened. A policy on developing orchards by applying technology and science is needed to help farmers improve their productivity and the quality of products. This would include applying machinery in cultivation, disseminating techniques on rice and orchard growing and pest control, and providing timely technical assistance to farmers during the growth of the crop in order to mitigate risks for farmers.

A master plan is needed on the use of rice farming and orchard growing land, the development of crops suitable to many types of soils. It should also include the encouragement of carefully chosen varieties of crops since many farmers select crop varieties spontaneously, rather than after careful thought.

There is also a need to enable women to participate more actively in agricultural extension programs. The programs should enhance the provision of information for female farmers. It is recommended that a policy on granting preferential loans for the purchase of state-of-art machines to use in rice farming and orchard growing be developed.

There should be more workshops gathering farmers to share experiences applying cultivation skills, agricultural production, caring for plants, pest control and fertilizer use. Gender balance should be seriously taken into account when organizing the workshops.

Market linkage

Female farmers should be offered dynamic access to the market information and knowledge throughout all phases of their cultivation production process, ranging from seedling selection and agricultural materials supply to consumption. Female farmers also need to be equipped with better skills in seedling selection. The government should have good control over and management of the quality of plant protection and fertilizer because poor quality chemicals and pesticides have impacts on agricultural products, plants and female farmers who can be most affected by fake and poor-quality fertilizers and pesticides. There is a need for a policy on health care and labour protection measures for farmers, especially for women because they directly work in hazardous environments and with pesticides which can have adverse effects on their health.

The policies related to the market should be concerned with improvement in accessibility to information for women working in rice and orchard farming. Support can be given to local people to develop certified brand names for their region. In some places they have already done this by themselves with Thanh Hoi rosy pomelos, Truong Thanh lychees, Tam Quan Nam coconuts, and Tan Hung guavas. Local governments should develop comprehensive strategies and plans for the crop changing to new seedlings and plant varieties based on research and

include the development of necessary selling product markets. In doing so, the change to orchard growing in localities can have better conditions for sustainable development.

The infrastructure for the transport of goods and materials for agricultural production needs to be improved and ensured. There should be an appropriate irrigation system for different crops and soil varieties to ensure a sufficient and well-timed water supply.

Coping with climate change

There is a need for a policy on measures providing appropriate support for rice farmers and orchards growers during times of natural disasters or lean harvests, ensuring a means of survival for households and their continuing capacity for reinvestment in cultivation cycles as soon as possible.

The programs coping with climate change should consider the gender gap and situation of women in the action programs. On the other hand, it should be noted that women are not a homogenous group but vary significantly by age, education, accessibility to resources and status of the household head, whether male or female.

Gender awareness

There is continuous need to raise the awareness of local officials, mass organizations, and male and female farmers of the roles of women in rice farming and orchard growing. It is necessary to implement measures to promote women to better participate in stages of production relating to the decision making and monitoring of agricultural investments in the community.

All the above mentioned policy implications are presented in the table below.

Issue	Recommendation	Implementing agency	Activity
Land	Complete the issuance of certificate of land use right to both spouses	Ministry of Natural Resources and Environment, Ministry of Agriculture and Rural Development Local government and mass organizations	<ul style="list-style-type: none"> - Review comprehensively the certificates of land use rights issued - Develop a plan of converting the certificate of land use right with priority given to the remote areas
	Issue certificate of land use right in accordance to crop structure (for instance, from rice growing to orchard growing to be in line with the practical production of local farmers)	Ministry of Natural Resources and Environment, Ministry of Agriculture and Rural Development Local government and mass organizations	<ul style="list-style-type: none"> - Review comprehensively the certificates of land use rights issued - Develop a plan of converting certificate of land use right from rice growing to orchard growing
	Conduct in-depth studies on land regroupings so that it is efficient and appropriate to the characteristics of local soil	Ministry of Natural Resources and Environment, Ministry of Agriculture and Rural Development Local government and mass organizations	<ul style="list-style-type: none"> - Review the local agricultural land comprehensive planning - Plan the land regroupings - Awareness changing communication programs for local farmers of land reallocation - There should be policies to encourage land regroupings
Capital	Increase loan amount and extend loan period, especially with orchard growing, and consider the loan amount and period in farmer's production cycle	Ministry of Natural Resources and Environment, Ministry of Finance, State Bank of Vietnam, Farmer's Association Local government and mass organizations	<ul style="list-style-type: none"> - Identify minimum demand of female farmers - Identify appropriate loans for each type of plants - Identify the period of loans in line with each type of plants
	Extend to the near poor and medium households access to loans with preferential interest rate as applied to poor households based on the assessment of their loan use plan Develop a policy of preferential loans for individuals and households converting and developing crop varieties	Ministry of Natural Resources and Environment, State Bank of Vietnam, Farmer's Association, Women's Union Local government and mass organizations	<ul style="list-style-type: none"> - Identify demand of loans based on types of households and methods of production - Bank of Agriculture and Rural Development opens its client categories of preferential interest rate

Capital	Intensify information dissemination of loan policies and programs initiated by the State	Ministry of Agriculture and Rural Development, State Bank of Vietnam Local government and mass organizations	<ul style="list-style-type: none"> - Inform about the loan plans for farmers, especially the potential borrowers - Provide timely loan policies to female farmers - Examine the difficulties of female farmers in gaining access to secure loans - Adjust the regulations on getting loans with the guarantee of the certificate of land use right
	Apply immediate measures to create favourable conditions for female farmers to gain access to secure loans without being required to be titled in the certificate of land use right	Ministry of Agriculture and Rural Development, State Bank of Vietnam Local government and mass organizations	<ul style="list-style-type: none"> - Examine the difficulties and obstacles female farmers face in their access to secure loans - Adjust the regulations of getting loans without requiring women to be titled in the certificate of land use right
Apply technology and science in production	Implement the application of mechanization in cultivation, intensify the dissemination of knowledge and techniques of cultivation and pest control for rice and orchard producers Implement the policy of preferential loans for the purchase of machines for rice and orchard growing	Ministry of Agriculture and Rural Development, Ministry of Science and Technology, Farmer's Association Local government	<ul style="list-style-type: none"> - Research to identify forms of mechanization and technology application in line with female farmers' cultivation - Organize training workshops and practice on cultivation techniques and pest control - Train female farmers to use machines in cultivation
	Develop a master plan for rice growing and orchard growing areas Develop a plan to develop crops in line with soil characteristics	Ministry of Agriculture and Rural Development Local government	<ul style="list-style-type: none"> - Identify rice growing and orchard growing areas appropriately based on the strengths of each locality - Disseminate the information regarding the master plan for female farmers and organize training workshops on crop conversion for female farmers
	Create favourable conditions for women to participate in agricultural extension programs	Ministry of Agriculture and Rural Development, Ministry of Science and Technology Local government and mass organizations	<ul style="list-style-type: none"> - Enhance female farmers' awareness of the role of technology and science in cultivation - Balance gender in agriculture extension training workshops, especially in training on orchard growing techniques

Marketing	Create favourable conditions for female farmers to link with market actively in all stages of production, such as seed selection, agriculture material supply, selling products	Ministry of Agriculture and Rural Development, Ministry of Science and Technology, Farmer's Association, Women's Union Local government and mass organisations	<ul style="list-style-type: none"> - Provide training to female farmers on skills of marketing in all stages of production process of rice and orchard growing - Provide market information for female farmers growing rice and orchard - Support farmers to develop geographical trade brands of fruits - Develop an appropriate irrigation system for different crops, ensure the adequate and opportune water supply for plants
	Expand selling product market of female farmers	Ministry of Agriculture and Rural Development, Farmer's Association, Women's Union Local government and mass organizations	<ul style="list-style-type: none"> - Ensure infrastructure for the transport of materials, goods for rice and orchard growers
	Develop a policy on health care for female farmers in cultivation	Ministry of Agriculture and Rural Development, Ministry of Health, Farmer's Association, Women's Union Local government and mass organizations	<ul style="list-style-type: none"> - Supervise and control the quality of pesticides and fertilizer - Develop a policy on female farmers' labour protection in working with pesticides
Support in case of natural disasters	There are measures to support rice and orchard growing women in the case of harvest loss and natural disasters	Ministry of Agriculture and Rural Development, Ministry of Labour, Invalids and Social Affairs, Farmer's Association, Women's Union Local government and mass organizations	<ul style="list-style-type: none"> - Provide support appropriate for each locality - Equip female farmers with necessary knowledge and skills to cope with climate change - The program of coping with climate change should take into account the differences in gender, age, education and access to resources
Gender awareness	Develop a policy on awareness raising for local officials, mass organizations, farmers, female farmers on the role of women in rice and orchard growing	Ministry of Agriculture and Rural Development, farmer's association, women's union Local government and mass organizations	<ul style="list-style-type: none"> - Provide training on awareness raising about gender equality for local officials and mass organizations - Provide training on awareness raising for farmer men and women

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Appendix

Appendix 1. Characteristics of 4 surveyed sites

Hai Duong:

Truong Thanh, a delta commune, is famous for its lychee of Thanh Ha district, Hai Duong province. The commune has an area of 165.6 hectares, in which the rice growing area is 7 hectares, orchard growing area (litchi) 152.6 hectares. The commune has 1,018 households, including 998 farmer households.

Truong Thanh is the first commune of Thanh Ha district shifting from growing rice to lychee orchards since 1990s. Presently, local households grow rice and lychee in the same land to take full advantage of agricultural land. Rice production is mainly to serve daily subsistence and rarely for sale. Some households had completely shifted into lychee growing which brings about earnings much higher than rice.

Hoa Binh:

Thanh Hoi, which is a mountainous, low zone of Tan Lac district, Hoa Binh, 7 km southeast from the district center, has a natural conditions favorable to the production of tropical fruits such as orange, longan, lychee, rosy grapefruit, green grapefruit. The commune has 2656.11 hectares of natural land, and 488.48 ha of agricultural land, in which paddy land is 315.68 hectares, and fruit tree land is 157 ha. The commune has 1,576 households with 6,468 persons (in which 3238 are female), 3,890 people in working age (women accounting for 50.9%). Muong ethnic is the majority with 89%, the rest are Kinh and some other minorities.

Previously, Thanh Hoi used to have Resolution in apricot and in material sugarcane. From August 2013, according to the Resolution No.10 of Tan Lac district's committee on economic policy of sustainable agriculture development with high-value commodity production, and toward the pomelo under Tan Lac brand, Thanh Hoi Commune Party Committee has developed the action plan for the Resolution. The general objective of this action plan is to strengthen the leadership of Party committee and executive authorities, the coordination of the unions, the full implementation of policies for farmers participating in the production of rosy grapefruit, green grapefruit in the commune, so that to reach 30 hectares in 2015 and 40 hectares of pomelo in 2020. In fact, today, many local households have switched from acacia, sugarcane for sugar and sugarcane for juice to pomelo.

Binh Dinh:

Tam Quan Nam is a coastal commune in Hoai Nhon district, Binh Dinh Province. The commune's occupational structure is a mixture of agriculture, livestock, horticulture and fisheries, and handicrafts. Regarding crops, rice and coconut are the two dominant plants and are under the local economic development policies. Watermelon is one of the plants

developed by some households themselves. Regarding rice, Tam Quan Nam has built “Model of large field” and “Advanced Fields” since 2013. Model of large field applies three same principles: same varieties, same field, and same time of fertilizing, which helps to change the people’s traditional perception and practice. Model of large field is supported by the people since it helps pest control, brings about good plant varieties and favourable conditions for harvest. In the coming years, the commune has the plan of land consolidation within the scope of model of large field, in order to bring about practical effects to households. In terms of coconut, together with maintaining and developing the original coconut tree - old coconut for handicraft items such as coconut oil, coconut fiber mats, etc, at present, the green Siamese coconut (for water intake) model is promoted and pennywort is grown under coconut canopy to increase income for coconut farmers. Some agricultural models such as pennywort under coconut canopy, green Siamese coconut, mushroom cultivation, technical transfer in integrated crop management, husbandry using biological gasket have been promoted. The poverty rate is currently about 7.5%.

Tien Giang:

Tan Hung is a western commune of Cai Be district, bordering with Cao Lanh district of Dong Thap province. Despite being a commune with an old fruit tree planting tradition, the fruit acreage has been increased thanks to the government’s policy of dykes to prevent floods during the period from 1995 to 1998. Like other communes in the research area, the popular agricultural production model in Tan Hung is the mixture of rice and fruit trees, towards the expansion of fruit area. There is no specific group for each plant variety. Income from agriculture alone can not meet the needs of most households, therefore, farmers still have to do more off-farm and agriculture work outside the family. The role of the local government in giving direction of crop varieties, and product sales is weak, and there is no specific policy initiatives supporting its local people. In agriculture, farmers have to be mostly prepared for themselves. The transformation of plant varieties occur based on market prices, namely, varieties with high prices are grown, then replaced by other varieties when prices fall off. At Tan Hung, these transformations have taken place with mango, lemon, guava, longan, etc, but there has been no specific product.

Appendix 2. Samples

I. In-depth interviews

Subject	Site				Total
	Truong Thanh (Hai Duong)	Thanh Hoi (Hoa Binh)	Tam Quan Nam (Binh Dinh)	Tan Hung (Tien Giang)	
Total <i>In which, divided by:</i>	18	18	18	18	72
1. Sex					
Male	4	4	4	4	16
Female	14	14	14	14	56

<i>2. Family characteristics</i>					
Family with two spouses at home	14	14	14	14	56
Family without husband at home/or No husband at home (migrant husband/ working away/husband died/divorced)	4	4	4	4	16
<i>3. Plant varieties</i>					
Rice and orchard	7	7	4	6	24
Orchard	7	4	8	10	29
Rice	1	5	2	0	8
Grew orchard and processed products from fruit/seedling development / non-agricultural activities (service / trading)	3	2	4	2	11
<i>4. Living standard</i>					
Better-off	8	7	5	5	25
Medium	8	8	9	10	35
Poor	2	3	4	3	12

II. Focus group discussion

Subject	Truong Thanh (Hai Duong)	Thanh Hoi (Hoa Binh)	Tam Quan Nam (Binh Dinh)	Tan Hung (Tien Giang)	Total
Commune officials (representatives of the commune board of management, Women's Union, Farmers' Association, Agriculture Extension, Fatherland Front, Chairman of Cooperative, etc	1	1	1	1	4
Male representatives of orchard households	1	1	1	1	4
Male representatives of rice households	1	1	1	1	4
Female representatives of orchard households	1	1	1	1	4
Female representatives of rice households	1	1	1	1	4
Female representatives of orchard or rice households having no husbands at home (husband working away or being widowed / divorced)	1	1	1	1	4
Total	6	6	6	6	24

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