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Research Article

Smallholder contract Farming in the Short Food Chain of Vietnam: a Case of Arable Farming

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Abstract: This article based on survey results of 205 responses from smallholders to understand the situation of contract farming in the short food chain of Vietnam in a case study of arable farming. The results showed that, only 15% smallholders signed written contracts with input suppliers, 32% had oral contracts. Vegetable growing group participated in the contract farming with input suppliers the most while the cereals group had the lowest number of people signing written contracts with the supplier. Half of the respondents want and willing to sign a written contract with the input suppliers, the highest demand for belong to the vegetable and fruit tree planting group. More than half of the smallholders participated in the product selling contract, but only 15% of them signed a written contract for the selling of their products. The vegetable growing smallholders participated in the product selling contract the most, while the perennial crops participated the least, and only a few of planting cereals smallholders signed a written contract to sell their products. The smallholder who did not participate in the product selling contract faced some vulnerable problems and get more difficulties in the selling of their agricultural products. Even though, many smallholders were not ready to participate and to sign a written selling contract. In order to improve the situation by participating in the farming contract, it is necessary to increase smallholders' awareness of the benefits of contract farming. National and local governments should have mechanisms and policies to promote short food chain linkages through contracts farming to develop local economies, strengthen agriculture and rural areas, create sustainable livelihoods for smallholder, improve a safe food supply system, contribute to the implementation of integrated food strategy.

Keywords: short food supply chain, contract farming, linkages, chain.

INTRODUCTION

Short Food Supply Chains (SFSC) is characterized by few intermediaries between producer and consumer, sometimes producers distribute products directly to consumers, and production and distribution take place in a certain geographical area. The short food supply chain aims to provide consumers with products that reflect characteristics such as: local identity, nature, healthiness and trustworthiness (Luane *et al*., 2018).

There are three main types of short food supply chains that connect consumers and producers of agricultural products, namely: direct chains are the chains where producers make products and sell directly to consumers; short-distance supply chains are chains in which producers make products and sell them within close proximity, usually around the production site; and an extended short food supply chain is a chain that may have geographic coverage, producers can sell products to consumers through local specialty stores or organic products stores (Marsden *et al*., 2000; Renting *et al*., 2003).

Some research presented that effective supply chain management could contribute to increase sustainable competitive advantage for organizations (Christopher, 1992; Bowersox and Closs, 1996; Lambert *et al*., 1999; Mentzer *et al*. (2001). Short food supply chain management help to enhance the efficiency of the actors involved in the chain through the effective use of resources and the development of internal and external linkages to create coherent coordination. Thus increasing competition between firms / producers across the chain (Christopher, 1992, 1996; Anderson and Katz, 1998; Birou *et al*., 1998; Lummus *et al*., 1998; Ketchen and Guinipero, 2004;

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Ketchen and Hult, 2007). Other studies showed that effective linkages contribute to improving the performance of enterprises and chain actors (Kalwani and Narayandas, 1995; Forza, 1996; Narasimhan and Jayaram, 1998; Salvador *et al*., 2001; Boyer *et al*., 2005), and may provide a sustainable potential competitive advantage (Rungtusanatham *et al*., 2003; Barratt and Oke, 2007). Information-based linkage, if managed effectively, can increase the performance of customers and suppliers (Barratt and Oliveira, 2001; Fawcett and Magnan, 2002; Croson and Donohue, 2003; Van der Zee and Van der Vorst, 2005), and this will in turn improved efficiency of chain actors (Armistead and Mapes, 1993; Berry *et al*., 1994; Gavirneni *et al*., 1999; Lee and Whang, 2000; Kent and Mentzer, 2003; Mentzer *et al*., 2004; Patterson *et al*., 2004; Barratt and Oke, 2007). One of the best forms of linkage in the short food supply chain is through contract farming. However, it is a fact that the proportion of small holder sign contract farming in Vietnam is still low, especially in short chains. To understand the situation of contract farming among the smallholder in the short food chain of arable farming in Vietnam, a research of smallholders contract farming in short food chain of Vietnam in a case study of arable farming was conducted to evaluate the situation and preferences of small holders with contract farming and provide some policy recommendation to improve the contract farming situation among smallholders in the short food chain of Vietnam.

METHODS

The primary data was collected by sending questionnaires to 04 main types of small holder representedin04 categories of short food supply chain in arable farming of Vietnam, including cereals, vegetable, fruit tree, other perennials through offline surveys from January to February 2020 and online surveys (via websites, Facebook, cello, Gmail, Google drives) March to April 2020 (due to covered pandemic).

Non-probability sampling method with specific sample numbers:

SS = (Z*Z)*(p*(1-p))/(e*e) = 1,96*1,96*(0,05*(1 – 0,05))/0,03*0,03 = 202

In which: Z is the standard distribution statistical value. With 95% confidence, Z = 1.96

p: probability of selection. With the limitation of study time, we choose p = 5%

e: level of error, e = 3%

The target survey group is arable smallholder, who produce and sell arable products in short food supply chains, including sell to local shops, to cooperatives and local supermarkets, traders, local collective kitchens (such as school, company's kitchens), online sales or local markets.

A total of 205 appropriate responses from smallholders were collected, of which 57 were specialized in growing cereal, mainly rice and corn, accounting for 28%; 47 people specialized in growing vegetable (23%), 63 people specialized in fruit tree (31%), the remaining 38% grew other perennial crops such as pepper, cashew, coffee and rubber. The average cultivate area of the surveyed smallholder was 1,484.8 meters square and the household maximum cultivate area was 10,000 meters square.

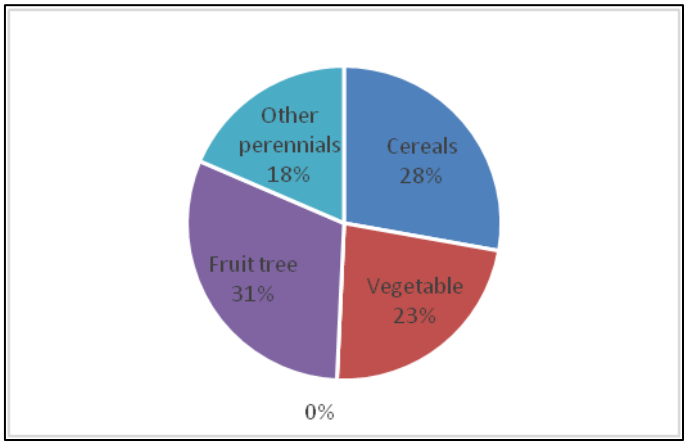

Figure 1. Survey sample
Source: Survey results, 2020

RESULTS

General information about smallholders

Average age of surveyed smallholders was 39 years old, the youngest was 18 years old while the oldest was 70 years old. Among them, 32.2% of people were under 30 years old, 17.6% were in the age from 30 to 39 years old, 24.4% of people were from 40 to 49

years old and the remaining 25.8% of people were over 50 years old.

Surveyed smallholder who grew cereals and vegetable were older than other groups with more than 40% of people aged 50 and over. Smallholders who grew fruit trees were mainly from 40-49 years old (31.7%). In contrast, smallholders planted perennial crops were much younger, with 47% of people under 30 years old. This is quite consistent with the reality in Vietnam that the people working in the agricultural sector, especially traditional agriculture, such as paddy rice and vegetable cultivation, has been aged over the past decades because young people tend to migrate to urban areas to work in industry and service sectors. However, thanks to policies to promote the development of agriculture in Vietnam in recent years, a part of young people returned to work in the agricultural sector, especially in high technology, organic agricultural production and exportable products such as fruits, pepper, cashew and coffee.

Table 1. Age of respondents**;** Unit: People

	Total	Cereals	Vegetable	Fruit tree	Other perennials
Total	205	57	47	63	38
Less than 30 years old	66	11	8	29	18
From 30 to 39 years old	36	11	9	7	9
From 40 to 49 years old	50	12	9	20	9
From 50 years old	53	23	21	7	2

Source: Survey results, 2020

Among the respondents, 18.5% had less than 10 years, 36.6% had more than 30 years, the rest had from 10 to 29 years of experience. Most of smallholders who planted cereals and vegetables had a lot of experience, in which nearly 90% of cereal growers and 70% of vegetable growers had more than 20 years of experience. The fruit tree growers and the other perennial tree growers had less experience. The majority of surveyed fruit tree growers had less than 20 years of experience (accounting for 85.7%). This is suitable in the context of Vietnam, as the cereal and vegetable planting group are Vietnam's traditional agriculture, most people are of high age, and have a long time working in this field. Meanwhile, the group of fruit-tree planting, especially for export has been developing strongly in recent years, has attracted a young force to join.

Table 2. Experience of respondents; Unit: People

Experience	Total	Cereals	Vegetable	Fruit tree	Other perennials
	205	57	47	63	38
Less than 10 years	38	2	8	18	10
From 10 to 19 years	45	4	6	26	9
From 20 to 29 years	47	15	13	11	8
From 30 years	75	36	20	8	11

Source: Survey results, 2020

Contract farming with input suppliers

Signing a contract with input suppliers will create more stability and ensure the quantity and quality of inputs for agricultural production. However, according to the survey results, only 15% out of 205 respondents signed written contracts with input suppliers, 32% had oral contracts. More than half of surveyed smallholders did not participate in contracts farming with input suppliers. It is the fact that small holders who do not sign contracts with input suppliers may face some vulnerability in case of fluctuations in the input market, such as they have to buy at higher prices, lower quality inputs, or in some extreme cases, may not be able to purchase inputs for their production.

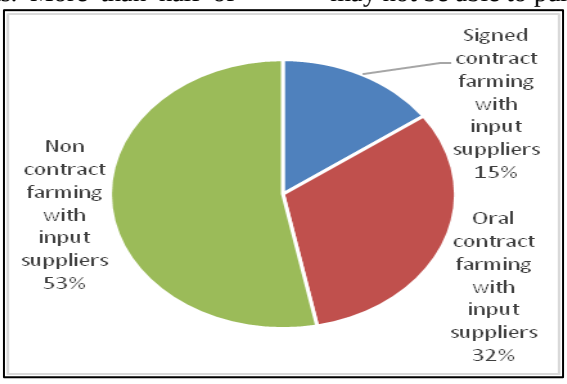

Figure 1. Situation of contract farming with input suppliers

Source: Survey results, 2020

Among the different tree planting groups, vegetable growing group participated in the contract farming with input suppliers the most at 55.3%, of which, 38.3% signed a written contract. The remaining groups had the number of people signing a written contract with the input supplier at a low level of around 10%. The cereals group had the lowest number of people signing written contracts with the supplier (5.3%).

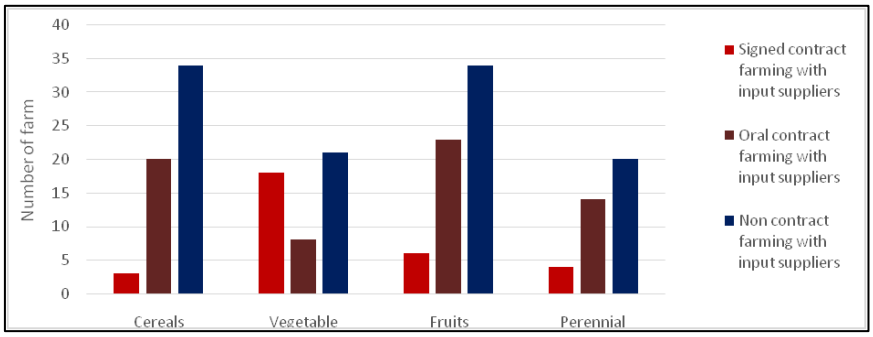

Figure 2. Contract farming with input suppliers by categories
Source: Survey results, 2020

Do smallholders want to participate in a contract with input suppliers? The survey results showed that, half of the respondents want and willing to sign a written contract with the input suppliers. The highest demand for signing written contract with input suppliers belong to the vegetable and fruit tree planting group. According to their response, they want to sign contracts to ensure quality and price stability of inputs. Some of them reported that they have purchased poor quality inputs. Some complained about rising input prices, and some had to buy input at a higher price.

The cereals growing group had the lowest demand for signing a written contract, only 26.3% of the respondents are willing to sign a written contract. According to the explanation from these smallholders, the reason for the low demand for signing contracts is that the inputs market is competitive with many suppliers; therefore, purchase of input materials for cereal production is quite easy. They want to buy directly and do not need to sign contracts. But some of them also complained that the input price was quite high.

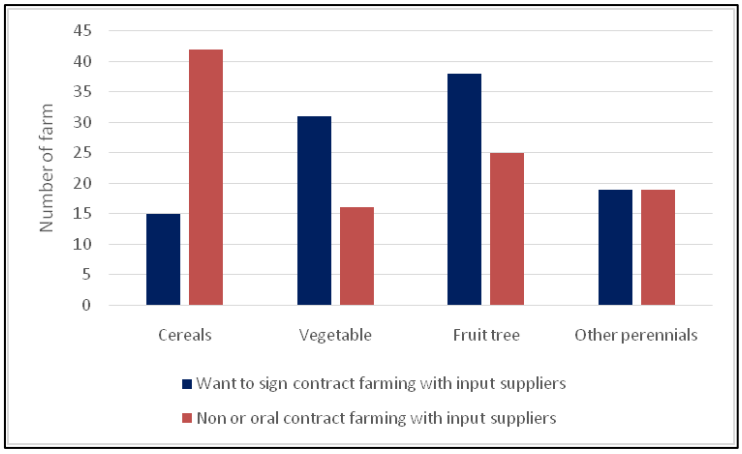

Figure 3. Smallholders' demand for contract farming with input suppliers
Source: Survey results, 2020

Distribution channels in the short food chain of Vietnam

Research results showed that smallholders are quite flexible in selling their products. Each smallholder can simultaneously sell their products through many different channels. It is possible to divide distribution channels of the surveyed smallholders in the short food chain in Vietnam into three groups: sell directly to customers (group 1); sell through one intermediary agent (group 2); and sell through two intermediary agents (group 3). In group 1, half of the smallholders sold their products directly to end-consumers through online or local markets, and 15.6% of them sold products directly to the local collective kitchen. In group 2, 53.7% of smallholders sold their products to local agricultural shops and 25.9% sold to local cooperatives and supermarkets. In group 3, 52.2% of the smallholders sold their products through traders, after that, traders redistribute products to local stores, supermarkets, collective kitchens and local markets.

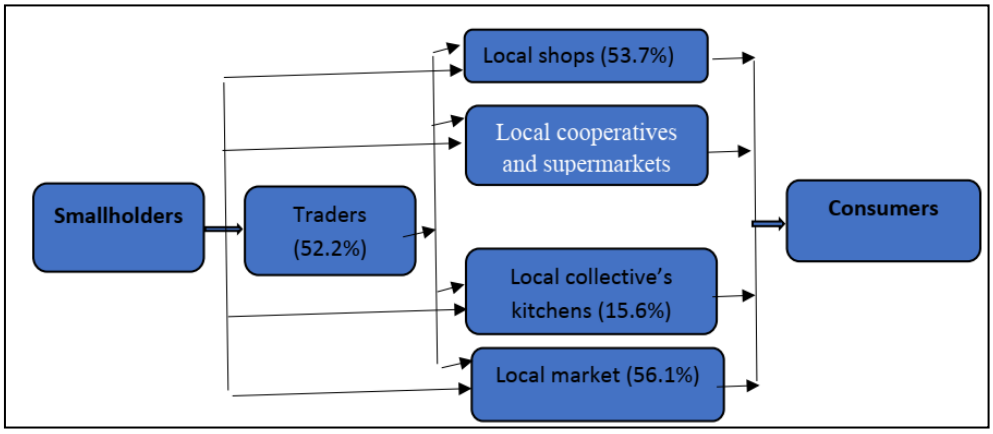

Diagram 1. Distribution channels in the short food chain of Vietnam
Source: Survey results, 2020

By product categories, fruit tree growing smallholders sold most of their products via traders (74.6%). As reflected by these people, they sell fruits to traders because of the large harvest yield at the short period of harvesting time. For example, lychee harvested within only haft of a month with the yield of thousand tons. Therefore, households planting fruit trees often link with traders to sell their products. In contrast, smallholders who grow vegetables sold the least via traders (only 17%) due to the amount of vegetables harvested evenly throughout the year, and the demand for vegetables of consumers is also consistent over time. They mainly sold to local cooperatives and supermarkets (61.4%), local agricultural shops (52.6%), and local markets or online (43.8%). The cereal growing group sold their products mainly at local markets, local agricultural stores, and traders. The small holders, who plant other perennial crops, mainly sold their products to traders and local markets.

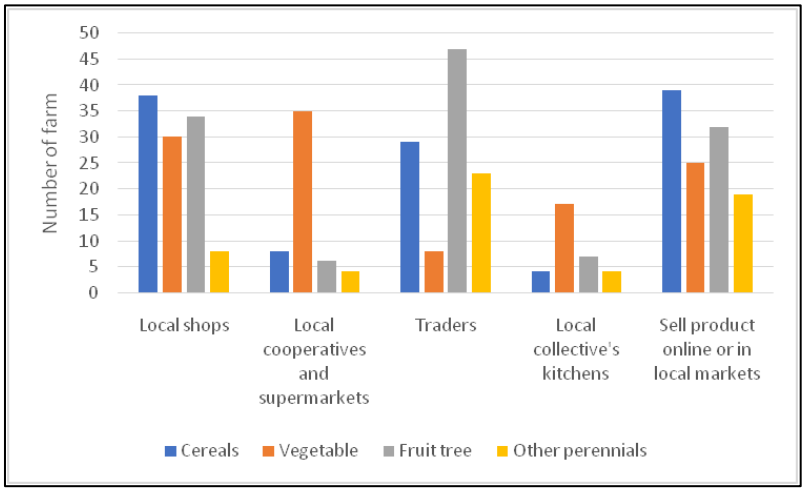

Figure 4. Distribution channels in the food chain of Vietnam by categories
Source: Survey results, 2020

Product selling contract

In the surveyed short food supply chain of Vietnam, the numbers of smallholder participating in agricultural product selling contracts are still small. In total, 54% of the surveyed smallholders participated in the product selling contract, but only 15% of them signed a written contract for the selling of their products, the remaining 39% just participated in the oral contract.

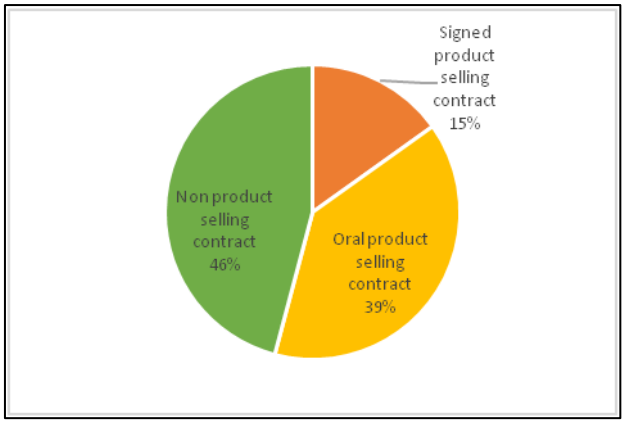

Figure 5. Situation of product-consuming contract
Source: Survey results, 2020

Among the 4 product groups, the vegetable growing smallholders participated in the product selling contract the most (72.3%), of which 29.8% signed a written contract. Following was the fruit growing smallholders, with 41.3% of households participating in the oral product selling contract, and 15.8% of households have signed a written contract. The smallholders who grew perennial crops participated the least in the product selling products with only 36.8% and the smallholders planting cereals participated the least in signing a written contract to sell their products (5%).

According to the survey results, the smallholder who did not participate in the product selling contract faced some vulnerable problems and get more difficulties in the selling of their agricultural products. There were half of smallholders who did not participate in the product selling contract have experienced at least one time of not being able to sell and had to discard their products; nearly 40% of them at least one time had to lower prices to sell their products, a third of them have been forced to reduce prices by traders.

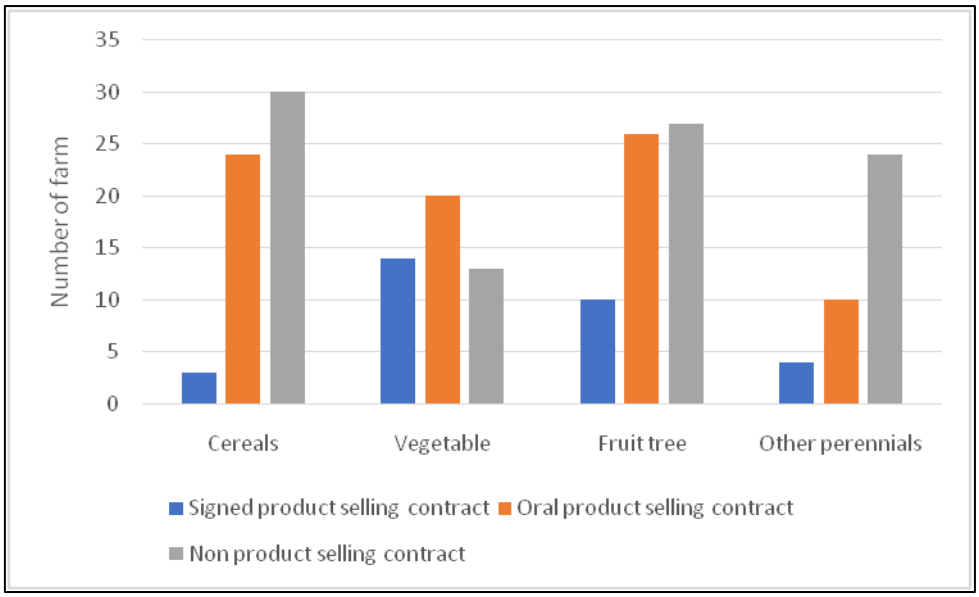

Figure 6. Product-consuming contract by categories
Source: Survey results, 2020

However, even have been facing with the disadvantages of not participating in a product selling contract, the survey data also revealed that many smallholders were not ready to participate and to sign a written selling contract. In total, only 46% of households wanted to sign a written contract in selling their products. The remainder was not ready or did not want to participate in a written contract for the sale of agricultural products, or would like to join an oral contract only. By categories, the smallholders who grew vegetables had the highest demand for signing the written product selling contract (74.4%), followed by the group of growing fruit tree smallholders (49.2%). Meanwhile, only 26.3% of cereal growers wished to sign a written contract of selling of their products.

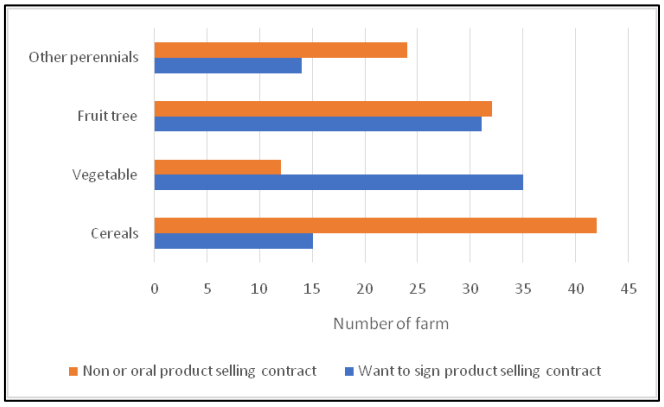

Figure 7. Smallholders' demand for product-consuming contract
Source: Survey results, 2020

CONCLUSION AND RECOMMENDATION

Short Food Supply Chains (SFSC) are characterized by few intermediaries between producer and consumer, aims to provide consumers with products that reflect characteristics of local identity, nature, healthiness and trust worthiness. There are three main types of short food supply chains: direct chains, short-distance supply chains, and an extended short food supply chain. Effective supply chain management could contribute to increase sustainable competitive advantage for organizations, help to enhance the efficiency of the actors involved in the chain through the effective use of resources and the development of internal and external linkages to create coherent coordination. Effective linkages contribute to improving the performance and efficiency of enterprises and chain actors. One of the best forms of linkage in the short food supply chain is through contract farming.

Survey results of 205 appropriate responses from smallholders whose average cultivate area was 1,484.8 meters square, of which 28% were specialized in growing cereal, 23% specialized in growing vegetable, 31% specialized in fruit tree, the remaining 38% grew other perennial crops such as pepper, cashew, coffee and rubber showed the general situation of contract farming in short food chain of Vietnam. The average age of surveyed smallholders was 39 years old, the youngest was 18 years old while the oldest was 70 years old. The average experience of smallholders was 17.7 years with the highest experience person was 43 years.

In total, there were only 15% survey smallholders signed written contracts with input suppliers, 32% had oral contracts. Vegetable growing group participated in the contract farming with input suppliers the most at 55.3%, of which, 38.3% signed a written contract. The cereals group had the lowest number of people signing written contracts with the supplier (5.3%). Half of the respondents want and willing to sign a written contract with the input suppliers. The highest demand for signing written contract with input suppliers belong to the vegetable and fruit tree planting group. The cereals growing group had the lowest demand for signing a written contract, only 26.3% of the respondents are willing to sign a written contract.

Smallholders are quite flexible in selling their products. Each smallholder can simultaneously sell their products through many different channels. Half of the smallholders sold their products directly to end-consumers through online or local markets, and 15.6% of them sold products directly to the local collective kitchen. 53.7% of smallholders sold their products to local agricultural shops and 25.9% sold to local cooperatives and supermarkets. 52.2% of the smallholders sold their products through traders, after that, traders redistribute products to local stores, supermarkets, collective kitchens and local markets.

The numbers of smallholder participating in agricultural product selling contracts are still small. In total, 54% of the surveyed smallholders participated in the product selling contract, but only 15% of them signed a written contract for the selling of their products. The vegetable growing smallholders participated in the product selling contract the most, following was the fruit growing smallholders. The smallholders who grew perennial crops participated the least in the product selling products and the smallholders planting cereals participated the least in signing a written contract to sell their products.

The smallholder who did not participate in the product selling contract faced some vulnerable problems and get more difficulties in the selling of their agricultural products. Even though, many smallholders were not ready to participate and to sign a written selling contract. In total, only 46% of households wanted to sign a written contract in selling their

products. The smallholders who grew vegetables had the highest demand for signing the written product selling contract, followed by the group of growing fruit tree smallholders.

In order to improve the situation of participating in the farming contract, it is necessary to:

- Training to increase smallholders' awareness of the benefits of contract farming, because, only when farmers understand contract farming' benefits, do they voluntarily and effort to participate in farming contracts.
- National and local governments should have mechanisms and policies to promote short food chain linkages through contracts farming to develop local economies, strengthen agriculture and rural areas, create sustainable livelihoods for smallholder, develop cooperatives, link farmers with other chain actors, improve a safe food supply system, contribute to the implementation of integrated food strategy, business and entrepreneur development, entrepreneurship ecosystem, change social and environmental friendly production and consumption habits.

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