

Contract Farming Arrangements in Cambodia: The Case of Kampot Pepper (*Piper nigrum*)

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Abstract

Small-farm production often suffers from capital constraints and lack of capacity to adopt new agricultural technologies. Contract farming (CF) is seen as an effective mechanism to overcome these difficulties, and can assist smallholders in shifting from subsistence agriculture to the production of export-orientated, high-value products. This study highlights the nature of contract farming in Cambodia currently implemented by the Kampot Pepper Agricultural Cooperative (KAMPACO) and the Kampot Pepper Promotion Association (KPPA), as well as the roles and responsibilities of the relevant stakeholders and farmers' benefits. It also identifies key issues encountered in contract farming schemes and seeks solutions to address these challenges. A total of 135 contract and non-contract farmers were interviewed using structured questionnaires; this data was supplemented by focus group discussions and key informant interviews. The results of the study show that the CF scheme improves the livelihoods of smallholder farmers, with contracting farmers having higher revenues than non-contracting farmers. The establishment of KAMPACO and KPPA and use of the scheme in managing pepper production appears to be the best alternative practice for Cambodia in recent years. However, some problems and challenges confront still smallholder farmers and contractors. Four main policy implications are recommended by this study to improve the system.

Keywords: Contract farming scheme, Kampot pepper, smallholders, high-value crop

บทคัดย่อ

การผลิตขนาดเล็กทางการเกษตรมักประสบปัญหาการขาดแคลนเงินทุนและความสามารถในการรับเทคโนโลยีใหม่ เกษตรพันธะสัญญาถูกมองว่าเป็นกลไกที่สำคัญในการเอาชนะอุปสรรคดังกล่าวและช่วยให้ผู้ถือครองที่ดินทำกินขนาดเล็กสามารถปรับเปลี่ยนจากการผลิตเพื่อยังชีพไปสู่การผลิตที่มีมูลค่าสูงเพื่อการส่งออกได้ งานวิจัยนี้มุ่งนำเสนอลักษณะพื้นฐานของเกษตรพันธะสัญญาในประเทศกัมพูชาที่ดำเนินการโดยสหกรณ์การเกษตรพริกไทยกัมปอต (Kampot Pepper Agricultural Cooperative - KAMPACO) และสมาคมส่งเสริมพริกไทยกัมปอต (Kampot Pepper Promotion Association - KPPA) บทบาทและความรับผิดชอบของผู้มีส่วนได้ส่วนเสียต่างๆ และประเมินถึงผลประโยชน์ที่เกษตรกรได้รับ รวมทั้งชี้ให้เห็นถึงประเด็นปัญหาสำคัญที่โครงการเกษตรพันธะสัญญาประสบและการแสวงหาทางออกต่อความท้าทายดังกล่าว งานวิจัยได้ทำการสัมภาษณ์เกษตรกรทั้งในและนอกระบบเกษตรพันธะสัญญาจำนวน 135 คนด้วยแบบสอบถามแบบมีโครงสร้าง และเก็บข้อมูลเพิ่มเติมด้วยการสนทนากลุ่มและการสัมภาษณ์ผู้ให้ข้อมูลหลัก ผลการวิจัยพบว่าโครงการเกษตรพันธะสัญญาช่วยปรับปรุงชีวิตความเป็นอยู่ของผู้ถือครองที่ดินขนาดเล็ก เกษตรกรที่เข้าร่วมการผลิตแบบเกษตรพันธะสัญญามีรายได้สูงกว่าผู้ที่ไม่เข้าร่วม การก่อตั้ง KAMPACO และ KPPA เพื่อบริหารจัดการการผลิตพริกไทยนับเป็นทางเลือกในการปฏิบัติที่ดีที่สุดสำหรับประเทศกัมพูชาในช่วงเวลาที่ผ่านมา อย่างไรก็ตาม ทั้งเกษตรกรรายย่อยและผู้ว่าจ้างในระบบพันธะสัญญาต่างยังคงมีปัญหาและความท้าทายหลายประการ บทความนี้ได้ให้ข้อเสนอเชิงนโยบาย 4 ประการเพื่อการปรับปรุงระบบเกษตรพันธะสัญญา

คำสำคัญ: โครงการเกษตรพันธะสัญญา พริกไทยกัมปอต ผู้ถือครองที่ดินขนาดเล็ก พืชผลที่มีมูลค่าสูง

Introduction

Agriculture plays the most economic important role in Cambodian society by ensuring food security as well as by providing employment and income opportunities for a growing population (Mund, 2010). Cambodia's economy is largely rural, with 80 percent of the population living in rural areas (NIS, 2008). Agriculture contributed 37 percent of the GDP and employed about 64 percent of the workforce in 2014 (FAO,

2012). Forty percent of Cambodian farmers are smallholders with less than one hectare of agricultural land per household. The country's agricultural resources consist primarily of 3.7 million hectares of cultivated land, of which 75 percent is devoted to rice as the primary commodity and source of income for the majority of farmers, and 25 percent to other food and industrial crops, primarily rubber, cassava, maize, pepper and tropical fruits (FAO, 2012).

Key issues and challenges faced by Cambodian farmers include costly and difficult-to-access production inputs; unreliable and poor fertilizer quality, leading to reduced yields; high interest rates on credit and debt; and limited market access and underdeveloped agricultural infrastructure and facilities (Sum and Khiev, 2015; Cai et al., 2008). Contract farming (CF) is one institutional initiative undertaken in recent years to address some of these problems. According to Eaton and Shepherd (2001), contract farming can be defined as an agreement between farmers and processing and marketing companies for the production and supply of agricultural produce under forward agreements, frequently at predetermined prices.

CF is viewed as a mechanism for poverty reduction and improvement for the smallholder producers who are predominantly rural farmers contracted to produce for large processing firms (World Bank, 2008). Olomola (2010) notes that contract farming "is a major agrarian institution" which is "capable of removing market imperfections in produce, credit, land, labor information and insurance markets." Farmers in less-developed countries like Cambodia face severe credit constraints - a gap that contract farming helps fill, and through vertical coordination with agribusinesses, smallholder farmers have access to new technology. CF provides credit in the form of inputs, extension services and markets for produce, hence its potential to raise production and incomes as well as to fight poverty for the rural poor (Minot, 2011; Bijman, 2008).

In Cambodia, CF has been practiced mainly through informal arrangements since the 1950s (Sum and Khiev, 2015). Some formal CF has been used for the production of various crops through agricultural

cooperatives, but it stopped during the civil war (Couturier, Savun and Ham, 2006). Formal CF practices were reintroduced only recently, in 2011, through the Sub-Decree on Contract Farming, which aims to support farmers in shifting from subsistence to commercial agriculture. The effectiveness of this sub-decree will be seen over the next decade. There is much to be done and improved; specifically there is a need for more research at the local level to develop policies and action plans that can promote CF.

Furthermore, there have only been a limited number of studies on CF in Cambodia (e.g. Cai et al., 2008; Nou and Heng, 2013; Kong, 2013); moreover, they focus mainly on rice contract farming and ignore other crops. Likewise, there has been no comprehensive study of CF schemes as a whole, or specific models of CF arrangements. Hence, a deeper understanding of the contract arrangement in specific CF models is needed in order to comprehend the key issues besetting the CF sector and seek solutions, as well as promote models that can bring more benefits to smallholder farmers.

This case study focuses on the CF arrangements for Kampot pepper, which is regarded as one of the best peppers in the world. The pepper in Kampot has a long history going back about 700 years and has always been one of the region's main crops. At the beginning of the 20th century, Cambodia was exporting about 8,000 tons of Kampot pepper. In 1960, there were a million pepper poles in Kampot. Unfortunately, from the time of the civil war that began in 1975 to the end of the century, pepper plantations in Kampot were almost extinct. Farmers started to reintroduce pepper in the late 1990s as old plantations were brought back to life by the survivors of the Pol Pot era.

Currently, the Ministry of Agriculture, Forestry and Fisheries (MAFF) and the Ministry of Commerce (MoC) of Cambodia have worked toward accreditation of Kampot pepper as a Geographical Indicators (GI) crop, and registration in the Kampot Pepper Producers Association (KPPA) as holder of the Kampot Pepper trademark. This case study highlights the nature of contract farming currently operating by KAMPACO and KPPA, reviews roles and responsibilities of the

relevant stakeholders, accesses the benefits of smallholder farmers involved in CF, identifies the most pressing problems faced by different key actors and seeks solutions to improve the system.

Materials and methods

Study site selection

The research was conducted in Kampot, a coastal province where the temperature and climate are suitable for growing pepper. It is the only known crop besides rice and vegetables in Cambodia for which CF involves sufficiently large numbers of farmers to be able to reach the required sample size for the study.

Multi-stage sampling was used to select the respondents. In the first stage, out of the five districts¹ of pepper production in Kampot Province, Kampong Trach district was selected because of the high proportion of farmers involved in pepper production. In the second stage, based on the proportion of farmers involved in contract farming, one commune, Damnak Kantuot Khang Tboung, was selected. In the final stage, three villages, namely Angkor Chey 1, Angkor Chey 2 and Trapaing Chrey, were stratified and a total of 135 respondents (98 contract farmers and 37 non-contract farmers) were selected for individual interviews.

Damnak Kantuot Khang Tboung Commune, literally South Damnak Kantuot, is situated in Kampong Trach District of Kampot Province and is about 136 km south of the capital of Phnom Penh. The total land area in this commune is about 6,100 ha, of which five percent is for settlement and infrastructure, 28 percent agricultural land and 67 percent forest land. The total population is 8,264 with a growth rate of about one percent per year. The average population density is about 135 persons per km². The population distribution of the commune is 90 percent farmers with the rest involved with fishing and trading or as government officials (DKT, 2015).

¹ Kampong Trach, Dan Tong, Toeuk Chhou, Chhouk and Kampot City are the geographical areas for the production of Kampot pepper (KPPA, 2009).

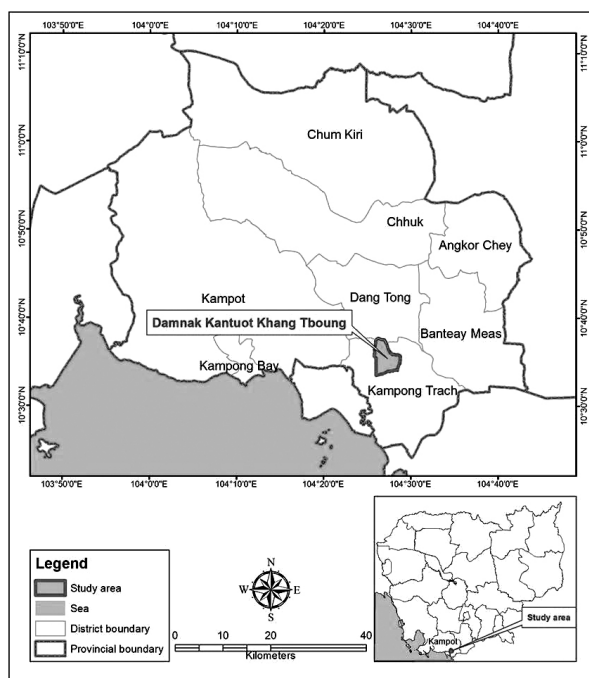


Figure 1: Map of the study area

Data collection and analysis

The study employed both quantitative and qualitative methods. The survey data were collected through a structured questionnaire that included both closed- and open-ended questions. The questionnaire was pre-tested and necessary modifications were made before the survey was carried out.

In addition, two focus group discussions and in-depth interviews were conducted with the key informants using purposive sampling. The targeted group included key informants from farmer cooperatives and associations, the provincial Department of Agriculture, provincial Department of Commerce, contracting companies and the NGOs involved, including Agence Francaise de Développement (AFD), the Cambodian Institute for Research and Rural Development CIRD and GRET. The primary data were supplemented by secondary data from

the pepper farmers' cooperative, policy frameworks, regulations, project reports and statistics from the provincial Department of Agriculture and Commerce.

The collected data were checked, coded and entered into SPSS spreadsheets where simple statistical analysis (frequency, means, percentages and one-way ANNOVA) was conducted.

Results and discussion

Kampot pepper production and marketing systems

In Kampot, pepper production has been managed by the Kampot Pepper Agricultural Cooperative (KAMPACO²), a farmers' cooperative with more than 241 members (CIRD, 2015) who produce quality pepper for export. The total plantation area belongs to cooperative members. Currently there are 125,000 poles occupying 50 hectares; however the harvested areas consist of only 25 hectares because the production is in its early stage. The KPPA members produce high-quality pepper grown without using chemical fertilizers or pesticides. Every year, KAMPACO collects around 50 percent of the total Kampot pepper products from producer members, which it sells to seven companies under written contract.

Table 1: Trends of the pepper sub-sector in Cambodia from 1995 to 2013

Statement	Year						
	1995	2000	2005	2010	2011	2012	2013
Area harvested (ha)	320	325	400	395	383	375	381
Yield (tons/ha)	6.25	6.78	6.25	5.96	6.02	6.4	5.56
Production (tones)	2000	2200	2500	2356	2304	2400	2498

Source: FAOSTAT (2016)

² KAMPACO was established by Kampot pepper producers on February 20, 2009. The objectives of this cooperative are to help pepper producers in doing their pepper business and to serve as a collective structure to represent them in negotiations or meetings. It plays important roles in price negotiation with partner companies/traders, collecting and selling products of all members as well as sharing information and experience related to production techniques and market situations. In short, it was established to protect and empower pepper producers. This cooperative is also a member of KPPA; thus, all KAMPACO members are members of KPPA.

While Kampot Province is the best geographical location for pepper cultivation in Cambodia, possibly even in the world, the province produces only 10 percent of the total production volume of pepper in Cambodia. Pepper farming has been increasing in other provinces, particularly Tbong Khmum, Kampong Cham, Mondulkiri and Ratanakiri, where more farmers are interested in expanding cultivation. Concerning average pepper yield, Memot pepper of Tbong Khmum Province is estimated to be 6-8 tons /ha, which is higher than the national average yield of 6.56 t/ha and other pepper-producing provinces in Cambodia such as Kampot, which produced 1.5-2.5 t/ha in 2013. Kampot pepper's yield is lower because it is grown organically by using cow manure and natural pesticides made from local plants.

Insect pests and diseases are the major constraints responsible for low productivity. Pepper is affected by several diseases that are caused by fungi, bacteria, viruses and mycoplasma, in addition to nutritional deficiencies. Among the pepper diseases the serious ones are foot rot, caused by *Phytophthora capsici f. piperi*; pepper vein yellows virus; slow decline complex caused by the burrowing nematode (*Radopholussimilis*) and *P. capsici* and the virus disease (little leaf) probably caused by the Badna virus (Anandaraj, 2000; Ramana & Eapen, 2000).

There are 17 traders registered with the right to distribute Kampot pepper products in the local and international markets (KPPA, 2009). Among them, only FarmLink Company directly contacts farmers and encourages them to work together in cooperatives to produce regular amounts for the export market and guarantee efficient quality control and product homogeneity. Kampot pepper has high market demand for the export market and KPPA delivered 58 tons of quality pepper to markets in 2015, out of a total of 60 tons produced in Kampot. According to FAO statistics, the official export volume of pepper has increased from 6 tons in 2010 to 735 tons in 2013 with an export value of \$US 4,312,000 in 2013 (Figure 2).

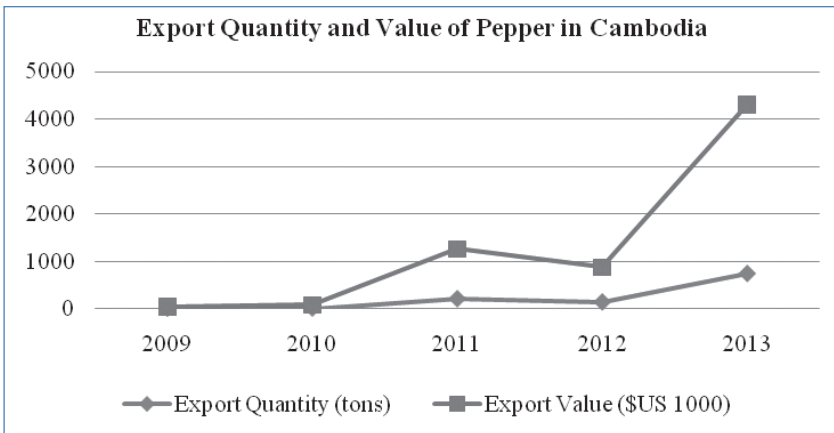


Figure 2: Export quantity and export value of pepper in Cambodia

In 2010 Kampot pepper gained Geographic Indicator (GI) status, a brand certification used to identify the origin and associated characteristics of a product. The price has tripled from \$US4.5/kg for black pepper, \$US8/kg for red pepper and \$US10 for white pepper in 2009 to \$US15/Kg for black pepper, \$US25 for red pepper and \$US26 for white pepper in 2015. According to the book of product specification of the protected geographical indication, Kampot pepper is characterized by its strong (but not burning) pungency, which is not harsh, but develops progressively in the mouth. Besides its spicy character, its aromatic intensity gives the pepper its particular quality. As stated in book of specification, Kampot pepper can be produced and marketed in the following types:

- Green pepper is the unripe fruit of the pepper plant and it is harvested when still young in the plant. It can be marketed and consumed either fresh (presented in clusters) or in brine or vinegar (presented either as full berries or as clusters).
- Black pepper is harvested when the berries start to turn from green to yellow and they are subsequently dried. It can be presented either in the form of full berries or already ground. Kampot black pepper delivers a strong and delicate aroma. Its taste, which can

range from intensely spicy to mildly sweet, reveals hints of flower, eucalyptus and mint. This black pepper suits all kind of dishes and distinguishes itself in particular with grilled fish.

- Red pepper is the dried product of fully ripe berries. It is presented in the form of full berries. This is a disconcerting pepper in terms of taste and it has been used in all kinds of unusual settings, from wild meat seasoning to vanilla desserts.

- White pepper is the fully ripe berries with the red skin removed.

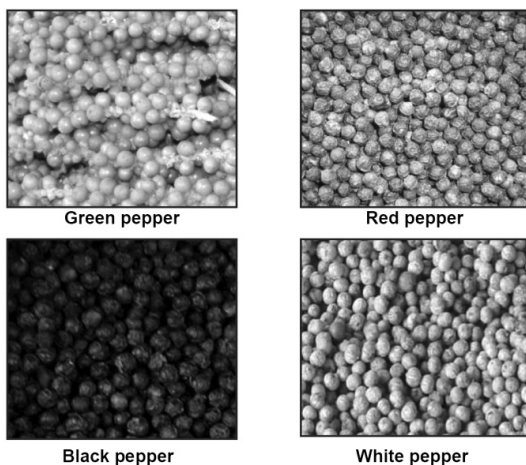


Figure 3: Types of Kampot pepper (whole berries)

Source: Book of specifications of the protected geographical indication (KPPA, 2009).

Through marketing promotion, all the Kampot pepper produced is sold to final consumers every year at local and international markets. There is no processing at the producer level. Producers sell their raw Kampot pepper to companies/traders, which then process and package it for the market. Discussions with the boards of KPPA and KAMPACO indicate that around 70 percent of Kampot pepper is supplied to international markets and the rest (30 percent) is supplied to local markets.

Contract farming arrangements

Eaton and Shepherd (2001) identified five models of CF, including centralized, nucleus estate, multipartite, informal and intermediary contract farming models. Through conducting a survey, focus group discussions (FGDs), key informant interviews and field observation, the case of Kampot pepper contract farming can be characterized as a multipartite CF model where farmers sign contracts with farmer cooperatives and private companies with coordination from KPPA and government agents.

Contracts in Kampot pepper production involve farmers, the Kampot Pepper Agricultural Cooperative (KAMPACO) and the Kampot Pepper Promotion Association (KPPA), which is currently working with 17 private companies to distribute Kampot pepper locally and internationally. Essentially, a yearly contract has been developed which can work in two different ways. The first system is for all producers who are members of KPPA and also members of the cooperative (KAMPACO). KAMPACO makes contracts with companies regarding the amount they need with the negotiated price. After that, KAMPACO will make other contracts with all the members. The price of pepper is set by KAMPACO based on the calculated production cost, and then the price is negotiated with the companies. The second system is for other producers who are members of KPPA but not of the cooperative (KAMPACO); they can make a contract directly with the company, as FarmLink currently does. Normally the price that farmers use to negotiate with the contracting companies is set by KAMPACO.

In most cases, farmers are required to register as KPPA members if they want to authenticate the quality of their pepper, and they must grow pepper based on traditional practices with the standards set by KPPA. To access a reliable market and obtain a higher price, farmers register as a member of KAMPACO to make a formal contract with KAMPACO to produce and supply Kampot pepper for contracting companies. A set of fixed prices is made known one year in advance for three different grades of pepper products, including \$15/kg for black

pepper, \$25/kg for red pepper and \$26/kg for white pepper as determined for 2015. Proper postharvest handling, including harvesting, handling, drying, sorting and grading, should be carried before sending pepper to KAMPACO. KPPA charges pepper producers \$0.25 per kg and KAMPACO charges \$0.25 per kg for production and quality monitoring to ensure that farmers follow the standards properly.

Various forms of support were provided to KPPA and KAMPACO by MAFF, MOC, CIRD and GRET. Those types of support included preparation of legal documents and training courses on production techniques, crop care and management, post-harvest handling and record keeping. After the granting of GI status, most training courses were provided by contracting firms through the KPPA. The public institutions continue supporting the sector through product promotions within their jurisdiction both at home and abroad.

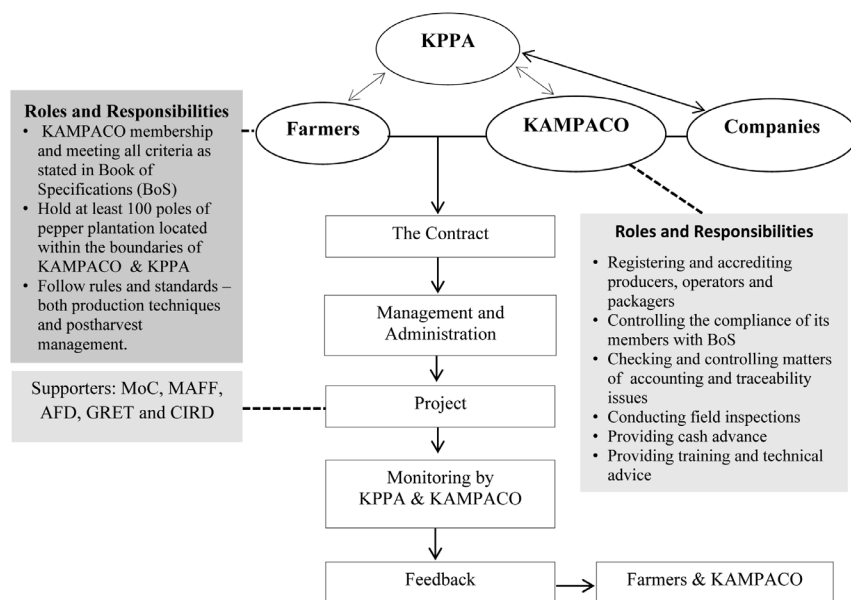


Figure 4: The multipartite contract farming model: Kampot pepper subsector

Source: Adapted from Eaton and Shepherd (2001), based on fieldwork of this research project in 2015.

Smallholders' benefits from contract farming

Contract farming can bring potential benefits to smallholder farmers by providing access to new and reliable markets with guaranteed and fixed pricing structures; creating job opportunities; and offering access to credit, input, and production services. In broader terms, it can stimulate the transfer of technology and skills, and help farmers comply with food safety and product quality standards.

The study found that Kampot pepper farmers are indeed smallholders (total lands from 1.5 to 2.0 ha, of which only 0.25 to 0.75 ha are allocated for the crop). Nonetheless, they have household assets such as motorbikes and mobile telephones; about two-fifths have water pumps for domestic use. They are able to generate relatively high incomes from Kampot pepper, earning on average \$8,600 - \$16,500 per ha. The farmers have increased their average annual income from \$400/household in 2009 to \$1,750/household in 2015. The high income is the result of the high price of the crop: black Kampot pepper now sells for \$15 per kg, from just \$4.5 per kg in 2009; white Kampot pepper sells at \$26 per kg, up from \$10 per kg in 2009. The reason is the consolidation of Kampot pepper farming under a GI trademark system.

The benefits that attract farmers are market stability, higher fixed prices, production services and inputs. In practice, farmers prefer simple and convenient procedures. Therefore, good coordination within and between participating firms and agencies and well-managed contract arrangements with farmers are required. Absence of any one of these factors may lead to discontent among farmers and result in contract cancellation and slippage.

Table 2: Advantages and potential risks for both partners in Kampot pepper CF System

	Advantages	Potential Risks
For pepper producers	<ul style="list-style-type: none"> • Access to credit and advance budget from KAMPACO and FarmLink • CF introduced best practices of pepper production and postharvest management. Access to training on production techniques and postharvest handling • Ensure the quality of products, the contract farmers are required to follow the standard as stated in the Book of Specification (BoS). Moreover, there is a strict control system set by KPPA to ensure the traceability and quality of Kampot pepper. • Access to reliable markets and price guaranty with higher price compared to non-Kampot pepper (non-Kampot pepper is \$US5 and black Kampot pepper is \$US15) • CF opens up new and export markets • Existing farmer cooperatives and associations promote Kampot pepper. All the members can share information and experiences with each other in terms of production or marketing. It also can empower producers. 	<ul style="list-style-type: none"> • To replant or to start a new plantation requires big investment capital. Normally, it costs from 10-15 \$ for growing one pole of pepper; and it takes 3 years to get production. Farmers may become indebted because of production problems and excessive advances • Farmers are subject to strategic and swift or seasonal management decisions that may adversely affect income, for example some farmers cut pepper vines and sell them to new growers. • Inefficient management, administration or marketing problems on the side of the contractor can mean that quotas are manipulated so that not all contracted production is purchased, leading to suboptimal income • Natural disasters (drought and limited access to water resources) • Pest outbreak • Fast expansion of individual private farms will reduce the size of smallholder farmers; smaller shares in production volume

Advantages		Potential Risks
For KAMPACO and FarmLink	<ul style="list-style-type: none"> • Production under contract is more reliable than open-market purchases since more consistent quality and volumes can be obtained. • Working with small farmers overcomes land and labor problems. • Close supervision of fields and farmers is achieved as KAMPACO and KPPA provide technical advice and farm inspection to ensure the safety and quality of products as required for export markets. • High demands for Kampot pepper in rich countries enable it to be sold at high prices. • Good management system set up by KPPA ensures the traceability and quality of Kampot pepper. 	<ul style="list-style-type: none"> • There is much demand, about 100 tons/year, but the supply is still low (around 60 tons/year in 2015). • Contracted farmers may face land problems through lack of security of tenure. • Poor management and lack of consultation with farmers may lead to farmers' dissatisfaction. • Farmers may sell outside the contract (extra-contractual marketing), thereby reducing processing quantity • There are many counterfeit products selling under the name of Kampot pepper in national and international markets. These counterfeit products make the final consumers feel disappointed with Kampot pepper while they buy and use it. • Lack of transport infrastructure (vehicles and good roads) may lead to unexpected problems in delivering according to schedule.

Source: MI (2015); CIRD (2015)

Cost and return of pepper production (CF versus non-CF)

The results of the study showed that pepper production improves the livelihood of smallholder farmers, with contracting farmers having higher revenues than non-contracting farmers. The net income per ha

from selling pepper is about \$19,216 for contract farmers compared with \$15,438 for non-contract farmers.³ The profit per ha of contract households is significantly higher than that of non-contract farmers (\$16,536 vs \$8,557). This may be because most non-contract farmers have fewer than three years' experience in pepper production, so they are still investing more in material and production inputs, about \$4,138 and \$4,201 more per ha, respectively. On the other hand, it may be because their plants have not reached the full bearing stage yet. The income alone, excluding other sources, could have an enormous impact on the improvement of living standards of the pepper-producing farmers, since the average household income in rural areas per year is only about \$2,700 (national average \$3,600), while the average household consumption is about \$3,400 (national average \$4,000) (NIS, 2014).

Table 3: Inputs and income of pepper production (2014 harvesting season)

Inputs and Income	Household Mean		Mean per Hectare	
	Contract Farmers (CF)	Non-CF	Contract Farmers (CF)	Non-CF
Material Inputs (\$)	1,776.81	1,862.43	2,331.65	6,470.42
Labor Inputs (\$)	265.54	118.26	348.46	410.87
Production Inputs (\$)	2,042.35	1,980.70	2,680.11	6,881.29
Net Income (\$)	14,643.64	4,443.83	19,216.35	15,438.64
Profits (\$)	12,601.29	2,463.13	16,536.24	8,557.35

Source: MI (2015)

Farmers' perceptions of the impacts of CF on pepper production and household conditions

The impacts of CF on production and household conditions of both CF and non-CF farmers are presented in table 4. Overall, the impact may be considered positive for every factor assessed for both CF and non-CF

³ Cost and return is calculated for one ha; in reality, however, most farmers have small plots. This research found that only 0.25 to 0.75 ha are allocated for the pepper crop. (KPPA, 2009)

farmers. Crop yield and profit have increased and these help boost improvement in other factors, especially kinship relations and participation in cultural events. In contrast to the general belief that pepper production would lead to farmers becoming socially isolated (compared to other households), higher incomes are linked to their appearing at cultural and religious events and being able to respond to invitations near and far.

Table 4: The impacts of CF on production and household conditions (CF vs non-CF farmers)

Indicator	Increased (%)		Same (%)		Decreased (%)	
	CF	Non-CF	CF	Non-CF	CF	Non-CF
Profit	94.9	78.4	5.1	21.6	0.0	0.0
Offered price compared to market price	93.9	73.0	5.1	10.8	0.0	0.0
Cost of inputs	79.6	75.7	18.4	18.9	0.0	0.0
Crop yield	86.7	78.4	12.2	21.6	0.0	0.0
Water use	73.5	81.1	23.5	16.2	3.1	0.0
Organic fertilizer use	52.0	66.7	27.6	11.1	19.4	19.4
Pesticide use	32.7	19.4	27.6	25.0	31.6	50.0
Dependence on credit for inputs	30.6	19.4	20.4	16.7	30.6	50.0
Dependence on cash loans	42.9	30.6	12.2	13.9	25.5	38.9
Technical knowledge	68.0	51.4	26.8	27.0	1.0	13.5
Market knowledge	74.5	54.1	22.4	32.4	0.0	5.4
Volume of sales	71.1	47.2	26.8	47.2	0.0	5.6
Bargaining power	51.0	37.8	41.8	43.2	2.0	10.8
Job availability	69.4	45.9	13.3	35.1	17.3	18.9
Labor wages	82.7	78.4	16.3	21.6	1.0	0.0
Network	87.8	75.7	7.1	21.6	3.1	2.7
Information/labor exchange	86.7	73.0	10.2	24.3	2.0	2.7
Participation in cultural events	89.8	83.8	9.2	16.2	0.0	0.0
Investment in education	60.2	59.5	30.6	24.3	4.1	16.2
Investment in healthcare	48.0	35.1	44.9	54.1	3.1	10.8
Kinship relationships	66.3	62.2	32.7	35.1	0.0	2.7

Source: MI (2015)

Policy and legislation in promoting contract farming in Cambodia

The government has encouraged CF as a means of linking small-scale farmers to markets. The Sub-Decree on Contract Farming, announced in February 2011, consists of five chapters and 13 articles. Significantly, it defines the implementation framework for contract-based agricultural production in Cambodia. Article 2 in Chapter 1 sets out the following four objectives: (1) strengthening responsibility and trust between producing and purchasing parties based upon the principles of equality and justice; (2) ensuring the accuracy of prices, purchases and supply of agricultural products quantitatively and qualitatively; (3) increasing purchasing, processing and exporting of agricultural products; and (4) contributing to national economic development and poverty reduction.

The sub-decree also mentions the institutions and coordination mechanisms led by the Ministry of Agriculture, Forestry and Fisheries (MAFF), which is responsible for communication, coordination and providing technical guidance and services. It states that MAFF should monitor and evaluate all functions and report to the government, and collaborate with relevant ministries and institutions. The sub-decree stipulates the establishment of the Coordination Committee for Agricultural Production Contract (CCAPC), made up of 18 components including MAFF, Ministry of Interior (MOI), Ministry of Commerce (MOC) and Ministry of Economy and Finance (MEF) (Chapter 2, Article 7). The committee has the Department of Agro-Industry (DAI) as its secretary and the main duties of this committee are the following:

- Developing policy and strategic plans that support and promote contract farming
- Facilitating and strengthening accord between contracting parties
- Intervening in, or reconciling quarrels or conflicts relating to agricultural production contracts that expert institutions are unable to resolve, or help settle conflicts between institutions.

The sub-decree defines the obligations of contract farmers and contractors (Chapter 3, Article 8), and the formalities and implementation of agricultural production contracts (Chapter 4, Articles 10 and 11).

Table 5: Roles and responsibilities of farmers and contractors as stated in CF sub-decree

Roles and Responsibilities of Farmers	Roles and Responsibilities of Contractor
<ul style="list-style-type: none"> • Comply with the terms and conditions set out in the agreement. • Produce required commodities based on seasonal conditions and within required time frame. • Supply on time a minimum quantity of products with specified grade/quality. • Accept payment in line with the product value as set out in the agreement. 	<ul style="list-style-type: none"> • Comply with the terms and conditions set out in the agreement. • Specify quantity and quality of products, delivery date and place of delivery, and acceptance procedures. • Provide producers with agricultural inputs such as propagation materials, seeds, aquatic species and animal breeds, credit advances, technical services and other support as agreed to achieve desired results. • Buy agricultural products in specified quantities and quality at agreed prices. • Pay producers for commodities within the time frame and in accordance with the terms and conditions specified in the contract.

Source: Sub-decree on contract farming, February 2011

Challenges encountered in the CF system

From the literature review, it is apparent that the main challenges of CF may include lack of capital, access to markets, post-harvest technology, breaching of contractual terms and the lack of procedures and appropriate policy framework. Some of these challenges are not relevant in the case of Kampot pepper. Nevertheless, there are still some problems that could potentially affect CF arrangements and sustainability.

Problems faced by farmers:

- Low yields: the yields currently achieved by Kampot pepper producers are considerably lower than the crops produced in other parts of the country (about 2.5 MT vs 6.5 MT). This puts more pressure on farmers in supplying the crop to meet the increasing demand for Kampot pepper. As pepper production is somewhat labor intensive, an increase in production area is not in itself likely to solve the problem. However, improved pepper varieties could help increase productivity.

- Pests and diseases: although there were only insignificant levels of pest and disease outbreaks reported in this study, the literature review indicated that these could be problematic. In the event of such an outbreak, farmers are likely to apply chemical pesticides as these act more quickly and effectively compared to natural remedies. Pest and disease-tolerant varieties of pepper could be needed.

- Source of water: hillsides offer suitable locations for pepper production. This creates the problem of water scarcity for watering crops in the dry season. Insufficient water sources could have major impacts on yields in the next harvesting period.

- Land tenure: from key informants and visual examination, most pepper crops are grown on newly-cleared land. Technically, this is still classified as forest land and could lead to land disputes and conflicts of tenure.

- Product fraud: Kampot pepper production is a lucrative business. Consequently, product fraud is inevitable. Kampot pepper is a GI trademark, so there are a lot of counterfeit products selling under the name of Kampot pepper in national and international markets. These counterfeit products lead to disappointment among consumers about Kampot pepper when they try it. As an example, it was reported in 2014 that 200 tons of Kampot pepper were exported to the European Union, while the KPPA recorded only 30 tons.

- An increasing number of companies are producing pepper: there are several companies interested in Kampot pepper production and they have started planting the crop themselves. This could represent a threat to smallholder farmers in terms of production capacity and decision making in KAMPACO, specifically price setting.

Problems faced by contracting firms: the contract firms dealing with CF do not operate in a business environment in which, by law, they are entitled to soft loans, tax breaks or exemptions and concessions for transport or infrastructure. As intermediaries do not require cash advances, the contracting firms may turn away from CF practices. This is not a good prospect for smallholder farmers. They benefit from advantages if their products are channeled through intermediaries.

Institutional problems: although MAFF acknowledged the limitations in sub-decree implementation of its Agriculture Strategic Development Plan 2014-2018, CF is not included in its prioritized list of laws, sub-decrees and circulars (Prakas). Instead, there is the statement: “In the future, MAFF will focus on developing the contract farming system.” Meanwhile, DAI has been testing some pilot projects by engaging with technical departments under the MAFF for contract arrangements and negotiations. The signed contracts are then endorsed by the DAI director. Preliminary results suggest that conflicts are reduced to a minimum by this process (Yi, 2015). However, agribusiness firms are still short of capital for future investment. Consequently, a nationwide legal framework for CF is needed to provide a favorable environment for production and the agribusiness sector in terms of financial and technical support.

Conclusion and recommendations

This case study demonstrates the suitability of CF as an institutional mechanism to overcome the challenges faced by farmers and meet the required quality standards set by KAMPACO and KPPA. The comprehensive contractual package with a full range of support services was welcomed by 241 small-scale farmers who desired to benefit from the income opportunities offered by the CF system. Kampot pepper CF is able to help producers develop new skills and access more demanding and lucrative markets. It shows that the scheme improves the livelihood of smallholder farmers, with contracting

farmers having higher revenues than non-contracting farmers. The establishment of KAMPACO and KPPA together using the CF scheme in managing pepper production is the best alternative practice for Cambodia in recent years.

Apart from the benefits that can be derived from CF, however, there are some problems and challenges confronting smallholder farmers and contractors. The main problem is related to production issues, including weather resilience, low productivity, difficulties in accessing pepper poles,⁴ lack of capital investment and lack of new technologies to control insect pest infestations. For contractors, the major problems associated with CF arrangements include an undersupply of products in respect of agreed quotas, lack of consultation that can lead to farmer discontent, and lack of capital investment.

The success of contractual arrangements for Kampot pepper production has four main policy implications. The first is to improve pepper productivity through strengthening and empowering KAMPACO and KPPA to increase their production capacity to respond to the current demand in export markets. Second, the government, NGOs and KPPA should provide intensive extension service and support farmers in getting better access to production inputs, particularly pepper poles. Importantly, the government needs to devote more attention to improving infrastructures such as rural roads and irrigation systems since most farmers have limited access to water sources during the dry season. Since there is a lot of counterfeit pepper selling under the name of Kampot pepper in domestic and international markets, KPPA and relevant government authorities should take more action to control counterfeit pepper. Finally, in enforcing the CF sub-decree, CCAPC should develop as soon as possible the templates for formal CF contracts to suit the particular needs of small farmers. This would help to ease coordination and harmonization in the initial stages and enable the CCAPC to carry out its duties effectively, especially in implementing the three roles stated in Article 7 of Chapter 2 of the sub-decree: to

⁴ As stated in the book of specifications of Kapot pepper, wooden poles should be used for production but access to wooden poles is limited because the cutting of trees is prohibited.

develop policy to support CF, to facilitate and strengthen accord between farmers and contractors, and to intervene in, or reconcile arguments or conflicts between farmers and contractors.

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