BJNRD (2022), 9(1): 1-10
Bhutan Journal of Natural Resources & Development

Article

www.bjnrd.org

Open Access

ISSN 2409–2797 (Print)
ISSN 2409–5273 (Online)

DOI: https://doi.org/10.17102/cnr.2022.67

Linking Smallholder Farmers and School through Contract Farming in Gasa, Bhutan

Tshering Dema[1] and Tashi Dendup[2]

Abstract

As contract farming (CF) is a recent phenomenon in Bhutan, less is known about it. Therefore, this study explored the practices, benefits, and challenges of CF in Khamoed gewog of Gasa district in Bhutan. Data were collected from the Bjishong Central School's mess committee members, chairpersons of farmers' groups (FGs), and members of FGs. The results showed that, amongst others, CF improved in smallholder farmers in terms of production, marketing, and household income. Similarly, the result also illustrated improved access to quantity and quality vegetables for school. However, both parties expressed several challenges of CF that need to be addressed for the long-term sustenance of such linkage systems. This paper discusses the modality of CF, the challenges and benefits of CF, and recommendations to improve the effectiveness of CF.

Keywords: contract farming, farmers' groups, smallholder farmers

Introduction

Contract farming (CF) is an arrangement in linking buyers and sellers by specifying the terms of sale in advance (Grosh, 1994; Nguen *et al*., 2015). CF is known for improving yield (Champika and Abeywickrama, 2014), revenue (Tripathi *et al*., 2018), profit (Islam *et al*., 2019), and income (Maertens and Vande Velde, 2017). CF effectively connects disadvantaged farmers to markets, enhances household welfare, and fosters agricultural modernization (Meemken and Bellemare, 2020). Hence, CF is often considered an efficient tool for rural development and poverty eradication (Bellemare and Lim, 2018). Given a wide variety of benefits, CF is becoming popular in many countries (Ncube, 2020). For instance, CF in the United States of America dates to the 19th century (Ncube, 2020); and it gradually spreads to other parts of the world (Ray *et al*., 2020).

The Royal Government of Bhutan has adopted the CF. Towards this effort, the Ministry of Agriculture and Forests (MoAF) has been promoting the marketing of agricultural products through effective marketing systems and institutional linkages (MoAF, 2014). One of the recent movements of CF at the national level was the signing of a contract on 19th April 2012 between the ministry of education and the MoAF by linking farmers' groups (FGs) with local institutions (e.g., schools, hospitals, and

[1]B.Sc. Agriculture, College of Natural Resources, Royal University of Bhutan
[2]Department of Sustainable Development, College of Natural Resources, Royal University of Bhutan
*Corresponding author: tashi.cnr@rub.edu.bt
Received: September 26, 2021
Accepted: April 7, 2022
Published online: June 25, 2022
Editor: Mahesh Ghimiray

monasteries), (MoAF, 2013). After that, few schools across the country were linked to FGs. By far, CF is seen as a win-win arrangement for partners involved. For instance, the supply of vegetables could benefit members of FGs as they can sell their products faster without losing vegetable qualities. Also, institutions facing difficulties to get fresh vegetables could have easy and timely access to both quantity and quality vegetables. Yonten (2019) also affirmed that CF could contribute to ensuring food and nutrition security for school children.

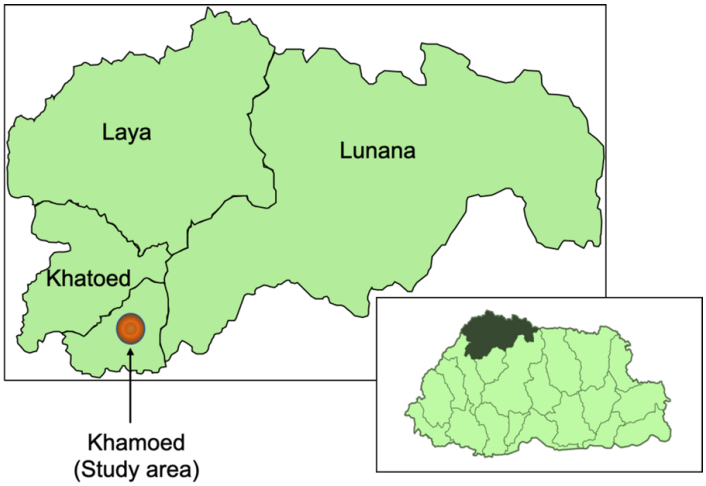

Figure 1. Study area

Although CF benefits both buyers and sellers, it also has its limitations. For example, CF creates unequal powers (Oya, 2012), losses farmers' autonomy (Carney, 1998), exploits family labour (Clapp, 1994), and brings undesirable social changes (Adam *et al*., 2019). Meemken and Bellemare (2020) reported that only three out of six developing countries in their studies showed positive income effects. It indicates that the benefits and challenges of CF are realized differently in different countries. However, little is known on CF's practices, benefits, and challenges in Bhutan, owing to limited studies on this subject. However, it is anticipated that understanding CF's status would help the stakeholders to promote CF further because Bhutan has numerous potential institutions (e.g., schools, colleges, monasteries, and hospitals) requiring a significant quantity of vegetables regularly, which could be sourced through smallholder farmers through contract. Therefore, this study assessed practices of CF, including its challenges and benefits, in Khamoed gewog under Gasa district, Bhutan.

Materials and Method

Study area

The study was conducted in Khamoed gewog (block), Gasa district, Bhutan (Figure 1). Gasa district engulfs about 148.90 km^2 in the northwestern part of the country with an elevation of 1,500-4,500 meters above sea level (Royal Government of Bhutan [RGoB], 2020). The Khamoed gewog consists of five chiwogs (sub-blocks), including Damji, Khailo, Geyza-Zomina, Yemina, and Jabisa, with a population of 496, i.e., 264 females and 232 males (National Statistics Bureau, 2018). Khamoed gewog lies in a region with favourable climatic conditions for crop production (RGoB, 2020). The district grows a little of everything, including cabbages, brinjals, green leafy vegetables, and tomatoes (MoAF, 2013). The gewog has one CF signed between five FGs and a school (Department of Agricultural Marketing & Cooperatives [DAMC], 2019).

Study participants and sampling method

Gasa district has four gewogs: Khatoed, Khamoed, Laya, and Luanna. Khamoed was selected because only Khamoed gewog has the CF (a boarding school linked to FGs). The target population was 91 members (70 female and 21 males) of five FGs (Table 1) linked to the Bjishong Central School. We collected data from 82 members, i.e., 90% percent of the target population. The total number of households was based on the Gasa district report (RGoB, 2020). Proportionate random sampling was carried out to select the representative farmers from five FGs in five chiwogs linked to the school (Table 1). Additionally, five

Table 1: Sample size from five chiwogs selected proportionately

Chiwogs	FGs	Population	Sample
Khailo	Khailo Sanam Tshogpa	17	15
Yemina	Yemina Namthen Tshogpa	17	15
Geyza-Zomina	Geyza Dachom Sanam Tshogpa	11	10
Jabisa	Jabesa Sanam Chithuen Tshogpa	16	15
Damji	Damji Sanam Tshogpa	30	27
Total		91	82

mess committee members of Bjishong Central School and five chairpersons of FGs were also interviewed to acquire additional information about the CF.

Data collection

Trained enumerators conducted face-to-face interviews using semi-structured questionnaires to collect primary data from members of FGs, chairpersons of FGs, and mess committee members of the school. Data were collected in 2021. The questionnaire was divided into three sets for members of FGs, chairpersons of FGs, and mess committee members of the school. Each interview lasted between five to ten minutes. Data were collected only after prior permissions from the Gasa District Administration and Khamoed Gewog Administration. Enumerators also got informed consent from all respondents to participate in this study.

Data analyses and presentation

Data entry, coding, and cleaning were carried out using Microsoft Excel 2010. Descriptive analyses such as frequency and percentage calculation were computed using Statistical Package for the Social Sciences (SPSS) version 25 and Microsoft Excel 2010. Results are displayed in the form of tables and charts.

Results and Discussion

Socio-economic profile of farmers

Table 2 presents the characteristics of members of FGs. Most farmers (78.05%) were females. The participation of more female farmers was because men were primarily out of home for non-farm activities (e.g., being wage labourers in construction sites); thus, most females were family heads and primary registrants in the CF. Most farmers (43.90%) had one to two family members, indicating a small family size in the Gasa district. The age for most of the farmers (81.71%) who participated in the study ranged between 22 and 60 years, meaning that they are mostly economically active. Most farmers (68.29%) were illiterate, in line with other rural communities in Bhutan. Most sampled farmers owned (58.53 %) and cultivated (73.17%) ≤ two acres of land, indicating smallholder farmers.

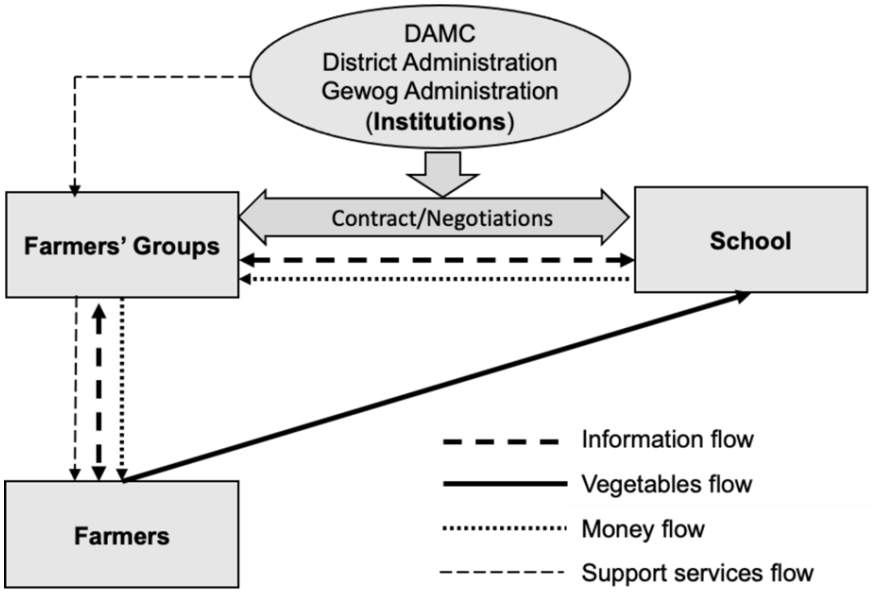

Figure 2: Modality of contract farming in Gasa District, Bhutan

Table 2: Demographic profiles of farmers

Variables	Categories	Frequencies	Percentages
Gender	Male	18	21.95
	Female	64	78.05
Age	60 and below	67	81.71
	61 and above	15	18.29
Qualification	None	56	68.29
	Non-Formal Education	5	6.1
	Primary	11	13.41
	Middle	7	8.54
	Higher	2	2.44
	Graduate	1	1.22
Marital status	Single	10	12.2
	Married	58	70.73
	Widowed	4	4.88
	Divorced	10	12.2
Total land owned (acres)	2 and below	48	58.53
	3-4 acres	27	32.93
	5 and above	7	8.54
Total land cultivated (acres)	2 and below	60	73.17
	3-4 acres	19	23.17
	5 and above	3	3.66
Main sources of income	Farming	66	80.5
	Non-farm activities	16	19.5
Family size (overall total)	1-2	36	43.9
	3-4	35	42.68
	5 and above	11	13.42

Practices of contract farming

Five farmers' groups and the Bjishong Central School in Khamoed signed the contract on 3rd April 2018. The CF aimed to establish a condition for smallholder farmers to produce and market farm products to the school. DAMC, along with other relevant institutions, facilitated the contract signing between the FGs and the school. Officials from District Administration (e.g., District head and district agricultural officer) and Gewog Administration (e.g., Gewog head and agricultural extension) were other relevant institutions. As shown in Figure 2, these institutions facilitated the contract signing and supporting members of FGs with agricultural inputs (e.g., seeds and poly houses) and capacity-building programs.

Farmers of five FGs were the sellers of vegetables. Their role is limited to vegetable production as per the contract's requirements. Every chiwog delivers vegetables to the school in turns after every two weeks. Farmers usually bring vegetables to a common collection point before delivering them to the school.

As the contract was signed between the school and FGs, FGs have essential roles. FGs serve as a bridge between group members (i.e., vegetable producers) and the school. For instance, Chairpersons of the farmers' groups collect information on vegetable demand from the school mess committee. Then they share the information with their respective members. The information includes but is not limited to who, how much, and when to deliver. If farm-

ers cannot deliver the demanded vegetables, farmers immediately inform the school through chairpersons. For example, chairpersons of respective FG notify the school mess in charge before one week if they could not produce or deliver the required vegetables. Also, chairpersons of FGs collect payments for vegetables from the schools and distribute them to the farmers. It is because the school does not make payments directly to farmers as per their contract. FGs are also responsible for conducting their regular meetings or coordinating any group activities, for that matter. FGs, especially group leaders, also represent their members to attend external meetings (e.g., price fixation meetings). Most of the support services, e.g., inputs, equipment, and extensions extension services are routed through FGs to farmers, as shown in Figure 2. Furthermore, FGs are responsible for resolving disputes among members (if any).

The Bjishong Central School is the consumer. The school had about 250 students feeding on the school's mess. The school annually spends about three million ngultrums on vegetables. Some vegetables specified under the contract include potato, chilli, cabbage, cauliflower, brinjal, and cucumber. The school mess committee members make a list of vegetables required at school and inform chairpersons of the FGs. The school monitors the quality and quantity of vegetables; makes payments to chairpersons, who later hands over the cash to the farmers.

Besides the contract agreement (Figure 2), farmers had to sell their vegetables to local markets, especially during the peak production season, as the school could not buy all their vegetables. Similarly, the school also had to buy vegetables from the local market when farmers could not supply the required vegetables during lean seasons.

Benefits of CF to FGs and school

CF benefited members of FGs in numerous ways (Figure 3). CF has motivated 93.9% of farmers to pursue farming. Eaton and Shepherd (2001) also supported that CF motivates farmers to pursue agribusiness. Bhutan provides subsidized agricultural inputs to farmers (Tobgay, 2006). After joining the CF, 89% of the farmers said they have better extension services, including subsidized greenhouse, electric fencing, and seeds. After entering the

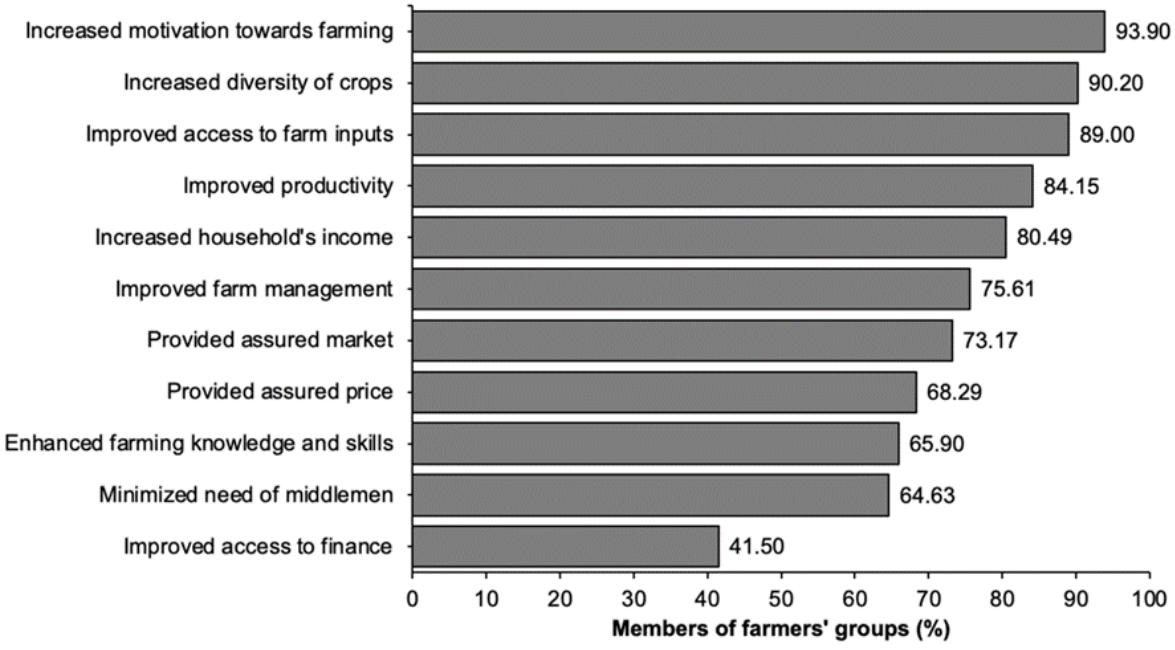

Figure 3: Benefits of CF to farmers

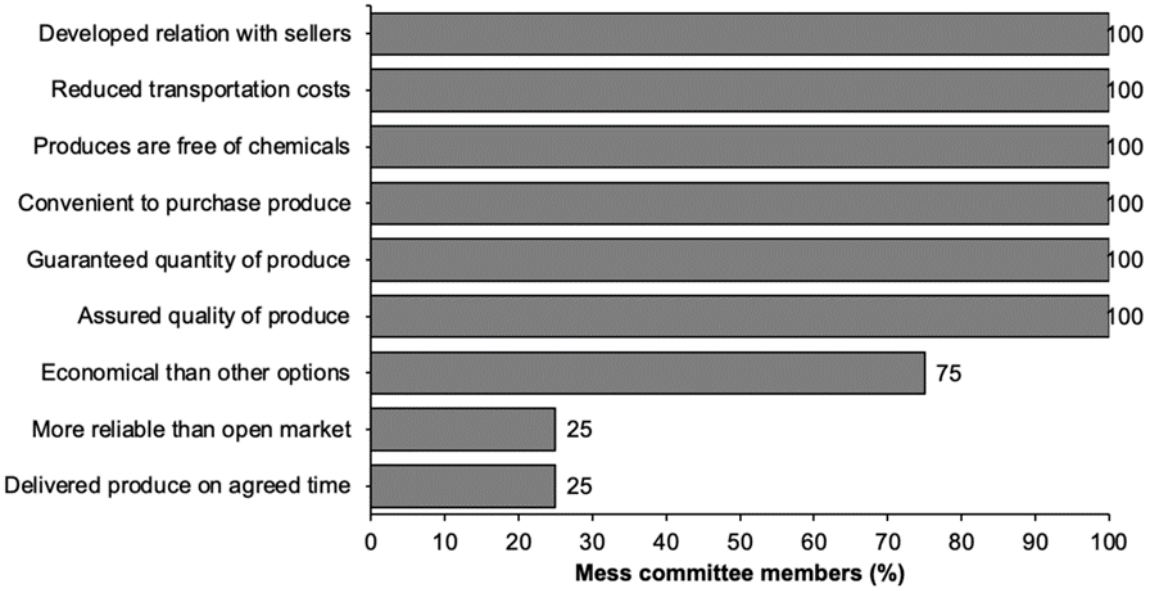

Figure 4: Benefits of CF to the school

CF, farmers learned and adopted new knowledge and skills (e.g., greenhouse installation and power tiller operation) to meet the contract demand. Farmers (about 76%) also reported that CF improved their farm management systems, such as land development, as Dori (2020) reported. Likewise, CF is also known for improving knowledge, skills, and farm management, as reported by other studies (Eaton and Shepherd, 2001; Simmons *et al*., 2005). As a result, CF improved productivity and household income. The finding is supported by Nguyen *et al*. (2015). Although farmers in Khamoed grew more cereals than vegetables, CF fostered a diversity of vegetables cultivated as per 90.2% of farmers. In the past, farmers of Khamoed grew minimal vegetables. However, farmers now grow varieties of vegetables such as cabbages, cauliflower, peas, asparagus, beans, broccoli, carrots, radish, onions, coriander, and garlic for sale. Thus, CF could further increase the crop diversity in Bhutan (Dizon *et al*., 2019). Other benefits of CF include assured price and market with minimized mediators. However, farmers in Gasa did not receive any financial supports from the school other than payment for the vegetables sold. Moreover, access to micro-credit is still a challenge for many smallholder farmers in Bhutan (Pathak, 2010). Therefore, more than half of farmers disagreed with the statement "CF improved access to finance."

The benefits of CF to the school are presented in Figure 4. CF fostered the relationship between the school and its community through various interactions. Their frequent interactions could strengthen the community-vitality. Khamoed gewog is far from the nearby local market (i.e., Khuruthang weekend market). Therefore, CF farming reduces transportation costs. Otherwise, the school needs to travel a few hours weekly to buy vegetables. The school mess committee members (100%) also reported accessing chemical-free vegetables from the local farmers. It is plausible that the school could access chemical-free produce through the CF because Gasa has been declared as a 100% organic district since 2004 in Bhutan (Wangmo and Iwai, 2019). Also, the school mess committee (100%) stated that the school could get quality and quantity vegetables as and when required. However, sometimes farmers fail to supply the needed quantity of vegetables during the off-seasons (mid-October to end of March). Pema *et al.* (2020) also reported a shortage of vegetables during off reason in

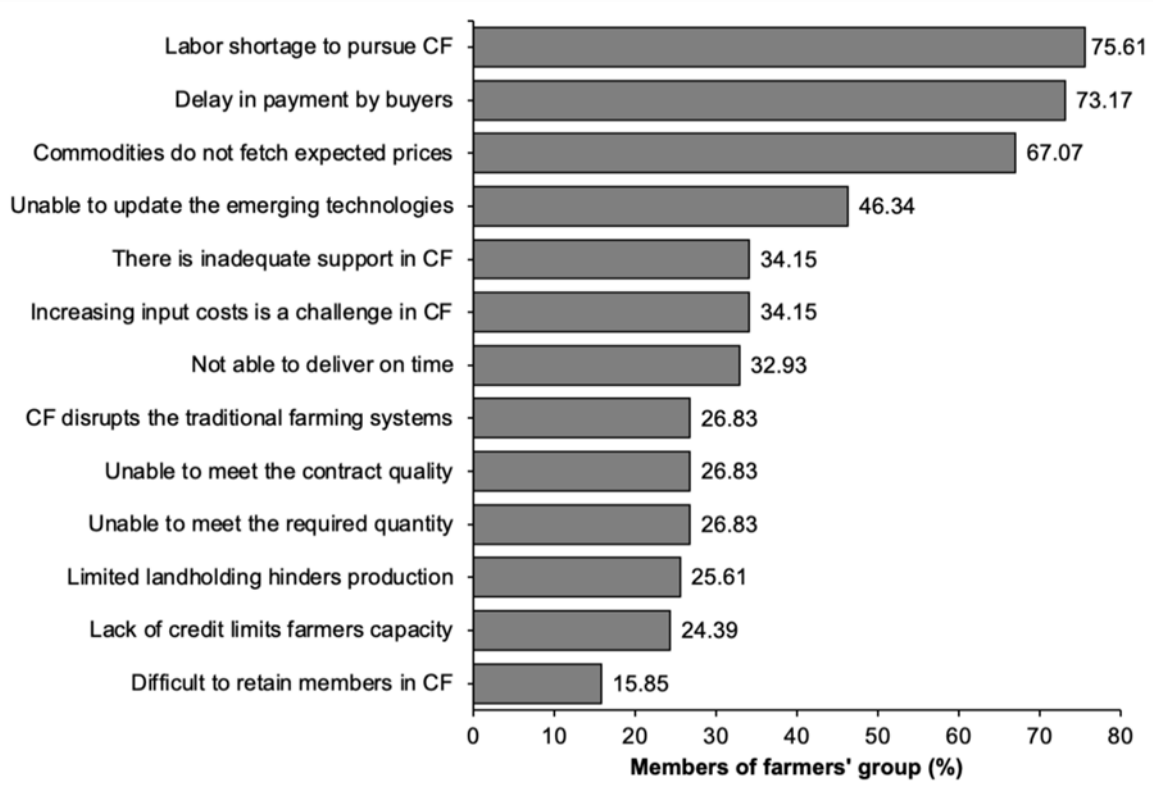

Figure 5: Challenges of CF to farmers

the Mongar district. The contract specified the need for quality vegetables, but what constitutes quality was not mentioned. Thus, the definition of quality was left to open interpretation, which could be problematic later. Most mess committee members (75%) reported that the CF is more economical than other options since they have to search or negotiate with unknown suppliers and intermediary agents like middlemen. Also, farmers themselves deliver their produce to school, reducing the transportation costs for the school, making CF the more economical way to purchase vegetables.

However, 75% of the school mess committee reported that vegetables were not delivered on time. The lapses happen, especially during the off-season. Vegetable production in Bhutan, including the Gasa district, is concentrated only in one season (mainly summer), which leads to shortages during other seasons. A few cases of lapses from the farmers' side during the off-season could have influenced 75% of members to disagree that they get more reliable products than the open market.

Challenges of CF to FGs and school

Besides the benefits of CF, FGs and buyers had to deal with several challenges related to CF. Most farmers (75.61%) reported the labour shortage issue on farming to fulfil the CF requirement. Young and educated people migrated to urban cities for non-farm employment, leaving mostly older people in rural communities. The school's late payment was also a problem for 73.17% farmers. The school sometimes delays payment by several months. As a result, farmers reported that they could not purchase inputs on time, impeding vegetable production and declining motivation to remain in the contract. According to mess committee members, the allocated budget for the mess requires adjustments in some months; thereby, delaying payment. However, if the delay in payment continues, it can ruin the existing relationship.

Additionally, more than half of the farmers

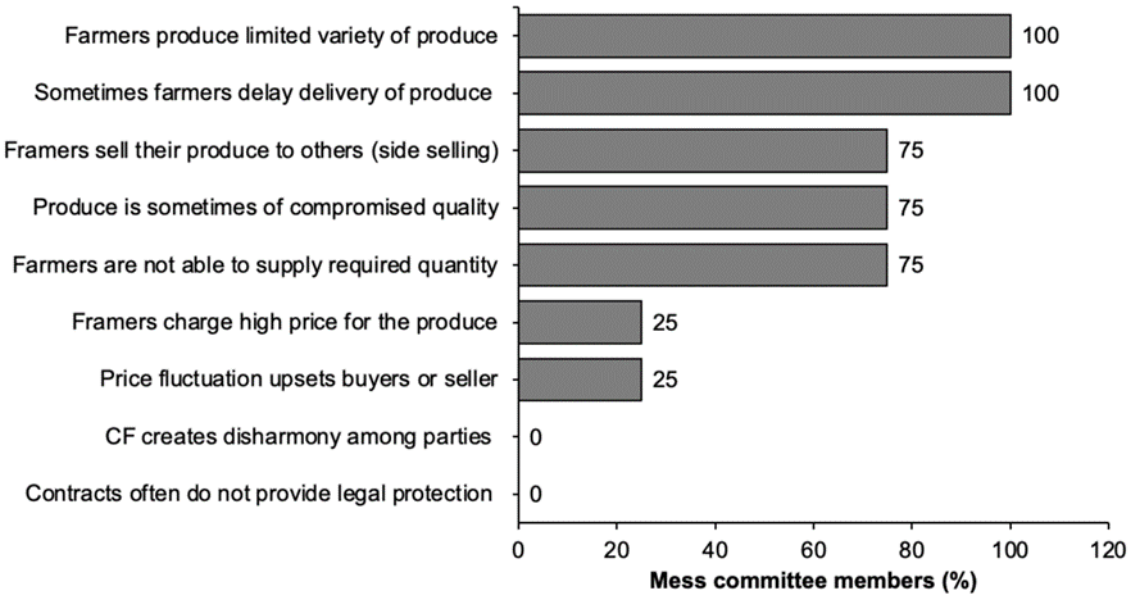

Figure 6: Challenges of CF to buyers

(67.07%) reported that they could not get the expected price for their produce from the school. However, most farmers did not report the problems related to access to credits, emerging technologies, and delivery of ordered quality and quantity on time. The finding suggests the need to revise prices timely, including farmers; otherwise, farmers would be very tempted to ignore their contracts (Shepherd, 2013). Other challenges (Figure 5) were confronted by less than 50% of the farmers.

Challenges encountered by the school are presented in Figure 6. The school mess committee members (100%) reported failing to deliver vegetables on time by farmers and limited variety of vegetables available as constraints of CF. CF increased the diversity of crops grown by farmers. Farmers reported that they even had to feed their surplus vegetables to cattle during the peak season. Additionally, the production of vegetables is not uniform throughout the year. For instance, farmers cannot produce all vegetables required by the school, especially from October to March, due to cold and harsh weather even under the protected cultivation. Moreover, poor road connectivity and lack of private vehicles during monsoon season delayed delivery of produce school on time. At times, farmers sold vegetables in local markets at a higher price (side-selling). There were a few incidences where farmers failed to meet the quantity and quality requirements reported by 75% of the school mess committee members.

Conclusion

This study explored CF's practices, benefits, and challenges in Gasa district, Bhutan. The contract was signed between five FGs and a Central School facilitated by external stakeholders, including district administration and local government. Green vegetables were the only product traded. CF has benefited both smallholder farmers (improve vegetable production and associated benefits) and buyers (access to fresh and cheap vegetables). Overall, the benefits of the CF outweigh the challenges. However, some challenges are repeatedly prominent, which could hinder the long-term sustainability of the CF. For instance, the definition of quality vegetables is not specified, which could be a potential source of dispute in the future. Farmers were unhappy with the vegetable price; hence, they practised side

selling of vegetables. The study also found the delay of delivery and payments as another significant challenge. The labour shortages in the family also caused insufficient vegetables during the off-season. Many of these problems could be addressed or minimized if FGs are proactive. For instance, the quality of vegetables should be clearly defined in the contract. The FG should monitor the quantity, type, and timing of supply. Given that farmers were unhappy regarding vegetable prices, FGs need to take the lead to negotiate for price revisions. Moreover, the frequency of delayed delivery of vegetables by farmers and delayed payment by the school need to be minimized for the CF's sustenance. Support farmers with adequate and suitable technologies, such as greenhouses and farm machinery applicable to smallholder farmers, could address the labour shortage and improve off-season vegetable production.

Acknowledgements

The authors would like to acknowledge farmers of Khamoed gewog, gewog agricultural extension agent, mess committee of Bjishong central school, and all the people involved in the study process for their valuable time and information.

References

Adams, T., Gerber, J.D., Amacker, M. and Haller, T. (2019). Who gains from contract farming? Dependencies, power relations, and institutional change. *The Journal of Peasant Studies*, 46(7): 1435–1457. DOI: https://doi.org/10.1080/03066150.2018.1534100

Bellemare, M.F. and Lim, S. (2018). In all shapes and colors: Varieties of contract farming. *Applied Economic Perspectives and Policy*, 40(3): 379–401. DOI: https://doi.org/10.1093/aepp/ppy019

Carney, J.A. (1998). Women's land rights in Gambian irrigated rice schemes: Constraints and opportunities. *Agriculture and Human Values*, 15(4): 325–336. DOI: https://doi.org/10.1023/A:1007580801416

Champika, P.J. and Abeywickrama, L.M. (2014). An evaluation of maize contract farming system in Sri Lanka: Adoption, problems and future prospects. *Tropical Agricultural Research*, 26(1): 62–73. DOI: http://doi.org/10.4038/tar.v26i1.8072

DAMC. (2019). *Annual Report 2018-2019*. Ministry of Agriculture and Forest, Thimphu, Bhutan.

Dizon, F., Jackson, C., Adubi, A. and Taffesse, S. (2019). *Bhutan policy note: Harnessing spatial opportunities in agriculture for economic transformation.* World Bank.

Dorji, C. (2020). Agriculture booms in fallow lands of Khatoed and Khamoed gewog, Gasa. *Kuensel.* < http://www.kuenselonline.com>. Accessed 20 July 2021.

Eaton, C. and Shepherd, A. (2001). *Contract farming: partnerships for growth.* FAO Agricultural Services Bulletin.

Grosh, B. (1994). Contract farming in Africa: An application of the new institutional economics. *Journal of African Economies*, 3(2): 231–261. DOI: https://doi.org/10.1093/oxfordjournals.jae.a036805

Islam, A.H.M., Roy, D., Kumar, A., Tripathi, G. and Joshi, P.K. (2019). Dairy contract farming in Bangladesh: Implications for welfare and food safety (Vol. 1833). IFPRI Discussion Paper No. 01833.

Maertens, M. and Vande Velde, K. (2017). Contract-farming in staple food chains: The case of rice in Benin. *World Development,* 95: 73–87. DOI: https://doi.org/10.1016/j.worlddev.2017.02.011

Meemken, E.M. and Bellemare, M.F. (2020). Smallholder farmers and contract farming in developing countries. *Proceedings of the National Academy of Sciences of the United States of America, 117*(1): 259-264. DOI: https://doi.org/10.1073/pnas.1909501116

MoAF. (2013). *Agricultural marketing policy of Bhutan*. Ministry of Agriculture and Forests, Thimphu, Bhutan.

MoAF. (2014). *10th FYP Progress Report.* Department of Agriculture and Marketing Cooperatives, Thimphu, Bhutan.

National Statistics Bureau. (2018). *Statistical Yearbook of Bhutan 2018*. RGoB, Thimphu, Bhutan.

Ncube, D. (2020). The importance of contract farming to small-scale farmers in Africa and the implications for policy: Review scenario. *The Open Agriculture Journal, 14*(1), 59-86. DOI: http://doi.org/10.2174/1874331502014010059

Nguyen, A.T., Dzator, J. and Nadolny, A. (2015). Does contract farming improve productivity and income of farmers? A review of theory and evidence. *The Journal of Developing Areas, 49*(6): 531-538. DOI: http://doi.org/10.1353/jda.2015.0094

Oya, C. (2012). Contract farming in sub-Saharan Africa: A survey of approaches, debates and issues. *Journal of Agrarian Change*, 12(1): 1–33. DOI: https://doi.org/10.1111/j.1471-0366.2011.00337.x

Pathak, B.P. (2010). Review for improving microfinance services in Bhutan. <https://www.findevgateway.org/sites/default/files/publications/files/mfg-en-paper-review-for-improving-microfinance-services-in-bhutan-jun-2010.pdf> Accessed 30 August 2021.

Pema, K. (2020). Business to business marketing in Bhutan: A case study from Balam gewog under Mongar dzongkhag. *Bhutan Journal of Natural Resources and Development, 7*(2): 34-42. DOI: https://doi.org/10.17102/cnr.2020.50

Ray, R.K., Kumari, M., Sinha, P., Umrao, A. and Nayak, S. (2020). Problem and prospect of contract farming in India. *Food and Scientific Reports, 1*(8): 63-68.

RGoB.(2020).Dzongkhag Administration, Gasa District. <http://www.gasa.gov.bt/gasa-dzongkhag>. Accessed 1 September 2021.

Shepherd, A.W. (2013). An introduction to contract farming. Technical Centre for Agricultural and Rural Co-operation (ACP-EU). <http://www.fao.org/uploads/media/Contract-Farming-Introduction.pdf>. Accessed 2 July 2021.

Simmons, P., Winters, P. and Patrick, I. (2005). An analysis of contract farming in East Java, Bali, and Lombok, Indonesia. *Agricultural Economics, 33*, 513-525. DOI: https://doi.org/10.1111/j.1574-0864.2005.00096.x

Tobgay, S. (2006). Agriculture diversification in Bhutan. <https://ideas.repec.org/p/ags/iaae06/25409.html>. Accessed 15 September 2021.

Tripathi, G., Kumar, A., Roy, D. and Joshi, P. (2018). Profits from participation in contract farming: Evidence from cultivators of onion, okra and pomegranate in Maharashtra, India. Paper presented at the International Conference of Agricultural Economists, Vancouver.

Wangmo, S. and Iwai, C.B. (2019). People's perception on ecosystem services in organic agroecosystem at Gasa, Bhutan. *Khon Kaen Agriculture Journal*, 47(6): 1287-1300. DOI: 10.14456/kaj.2019.117

Yonten k., (2019). 29 Farmers groups linked to 18 schools and a hospital. *Businessbhutan.* <http://www.businessbhutan.bt>. Accessed 20 July 2021.