ASIAN JOURNAL OF AGRICULTURE
Volume 7, Number 2, December 2023
Pages: 76-82

E-ISSN: 2580-4537
DOI: 10.13057/asianjagric/g070202

Value-chain analysis of the ginger sub-sector in Salyan District, Nepal

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Manuscript received: 12 May 2023. Revision accepted: 6 June 2023.

Abstract. *Acharya N, Chaurasia J, Kandel P. 2023. Value-chain analysis of the ginger sub-sector in Salyan District, Nepal. Asian J Agric 7: 76-82.* A Value Chain (VC) strategy of market-driven firms is required to solve the present shortcomings in ginger's marketing channel and the ensuing value addition throughout the channel. The study examines ginger's producer share, pricing spread, marketing margin, and value-chain diagram. Furthermore, 50 producer families from each of Malneta of Sharada Municipality and Chande of Siddhakumakh Rural Municipality in Salyan District, Karnali Province, Nepal were selected for the household survey using purposive random sample based on the degree of production and producers' cultivation of ginger in more than one ropani, i.e., total 100 households, five collectors, five wholesalers, and five retailers were surveyed for analysis. The total ginger productivity at the research location was 15.43 Mt/ha. *Sutho* (dried ginger) earned an average of 25.81% of the earnings. Furthermore, 100% of producers said they were satisfied with the low price but higher than the farms' gate price by NPR 24. There was an NPR disparity of NPR 8 in retail marketing costs between retailers and end users, and NRs gap of NPR6 in marketing costs between wholesaler and retailer. While the difference in marketing costs between the collector and the distributor was, NPR 6. Retailers and consumers had the largest net margin (20%), which collectors and wholesalers followed. Consumer pricing was (8.3%), wholesalers and retailers (6.66%) and the producer share was calculated to be just 40%.

Keywords: Disparity, net margin, producer share, *sutho*, value chain

INTRODUCTION

Nepalese people depend heavily on agriculture, which generates 23.95% of the country's GDP (Gross Domestic Product). In Nepal, 400,000 farmers are employed in the ginger sector (CBS 2021). Regarding output, Nepal ranks fourth internationally, providing 9.2% of the total ginger in 2019 (CBS 2021). Ginger is planted on 325 hectares in the Salyan District, with a 3,217 Mt production and a 9.90 Mt/ha productivity (MoALD 2021) (Figure 1). India and China are the top two producers, accounting for 35.2% and 18.3% of the total, respectively (MoALD 2021). The Nepal Trade Integration Strategy-2017 designated ginger as one of the 12 priority export items due to its strength brought on by ideal geoclimatic conditions, excellent quality, and continuous rising demand in the worldwide market. The Nepal Trade Integration Strategy seeks to raise the export price for Nepalese ginger from 217 US$/MT to 815 US$/MT by 2020 through value addition within the nation (MOF 2016). The share of ginger, which has the HS code 91010, in overall exports was only 0.6%, and the RCA index for ginger in Nepal's NTIS 2010 export potential product list was 146.4 (Salike and Lu 2015). In the fiscal year 2020-2021, Nepal exported 6,065,622 kg of ginger for a cost of NPR 448,364,000 (TEPC 2021). According to MoALD (2021), Nepal exported neither crushed nor grounded fresh ginger of 7,656,835 kg worth of NPR 234,502,000 (1,776,800$), *Sutho* (dried ginger) of 808,861 kg at NPR 123,519,000 (935,892$) and other ginger crushed or grounded 381,235 kg at NPR 77,757,000 (589,158$) NPR in the fiscal year 2019/2020. Ginger is typically exported from Nepal in huge quantities in its fresh and *sutho*, or traditionally dried forms. Recently, ginger with an organic certification has been transported to European markets in very small quantities (Acharya 2014).

Kaplinsky (2000) and Li et al. (2021) state that a value chain is a set of tasks and services necessary to move goods from manufacturing to consumption or final use. The actors in the value chain are the suppliers of the input, the producers, the processors, the traders (wholesalers, retailers), and the consumers (Kaplinsky 2000). According to Kaplinsky and Morris (2001), Value-Chain Analysis (VCA) is the full spectrum of tasks necessary to take a good or service from conception through the various stages of production (involving a combination of physical transformation and the input of different producer services), delivery to final consumers, and final disposal after use. Analysis of the institutional support for production at different phases is added to VCA in addition to the movement of a product from one stage to another and identification of the players, firms, and their services (Kaplinsky and Morris 2001). This occurs through process, product, functional, and chain upgrades.

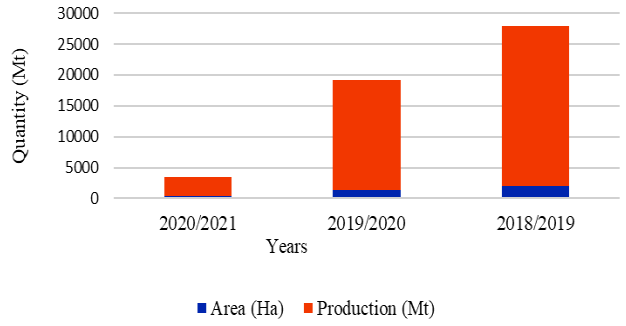

Figure 1. Area and production of ginger in three consecutive years in the Salyan District, Nepal

A group of vertically connected economic agents is called a "value chain" when each agent serves as both a supplier and a client of an upstream and downstream agency that are both members of the chain. These agents directly contribute to producing, processing, and delivering the goods through the various phases that increase the value of the nation's resources (Bellu 2013). The entire process from production to consumption, including harvesting, grading, packaging, storing, price fixing, selling, and buying, is called agricultural marketing (MDD 1999). The marketing margin, often called the retail farm gate margin, is the sum of the prices paid to farmers for their produce and the retail price of the commodity (Colman and Young 1989). Many studies have examined the socioeconomic analysis of the ginger value chain and the efficiency of ginger production or agricultural practices. Nonetheless, it isn't easy to calculate quantitative information on economic prospects in many sections of its value chain. Ginger's producers, processors, and marketers have gotten little attention regarding how they may boost profitability. This study aims to fill this gap by estimating actors' net margins in the channel, examining the economic relationships operating along the ginger value chain, and sketching a process value-chain diagram.

MATERIALS AND METHODS

Selection of study area

Based on their level of production potential, Malneta in the Sharada Municipality (28.38˚ N, 82.18˚ E) and Chande in the Siddhakumakh Rural Municipality (28.26˚ N, 82.11˚ E), Salyan District, Nepal were specifically chosen as research study locations (PMAMP 2018). The ginger growers who cultivated over or equal to 1 ropani (509 m^2) were selected in a sampling frame.

Sources of information

During the research study, both primary and secondary information was gathered. All value chain participants, including input suppliers, producers, traders, and service providers, as well as important informants from related industries and household surveys, served as the main sources of information. Additionally, secondary data on ginger production, marketing, and the value chain approach was gathered from various articles, reports, journals, books, and online resources, typically from the DFNCCI, zone office under the PMAMP, district ginger trader's association, etc.

Sample and sampling techniques

Therefore, to prepare the inventory of farmers in the study areas, farmers groups and cooperatives, PMAMP, and the Agriculture Knowledge Center (AKC) were consulted. From Sharada Municipality and Siddhakumakh Rural Municipality, a random sample of 100 producers (50 from each of two local levels), five collectors, five wholesalers, and five retailers were selected.

Data analysis

Various statistical programs, including MS Excel and SPSS, entered and analyzed the collected data and information.

Price spread

Price spread, often known as retailer price, is the distinction between the farm gate price farmers receive and the price consumers pay (Gardner 1975).

Price Spread = Retailers (P_r) – Farm gate price (P_f)

Producer's share

The price paid to producers is called their "producers' share," a percentage (%) of the retail price or the price consumers pay. The following formulas can be used to compute it (Mankiw 2020).

$$P_s = (P_f/p_r) *100$$

Where,
P_s = Producers share
P_r = retailer's price
P_f = Producers price (farm gate price)

Indexing

The relative importance of the various production and marketing issues was examined using a 5-point scale of extremely important, highly important, moderately low, relatively low, and low problems: 5, 4, 3, 2, 1. The index of importance was computed using the following formula

$$I_{Imp} = \sum (S_i * f_i/N)$$

Where,
I_{Imp} = index of importance
$\sum$ = Summation
S_i = scale value
F_i = Frequency of importance given by the respondents
N = Total number of respondents

Value-chain analysis

The price paid to the interested stakeholders (Producers, wholesalers, retailers, and consumers) and the production cost were calculated, as well as the margin due to each participant in the value chain. The producer's share and marketing margin spread were also computed for each distinct chain in the study area. Price spread was also examined at each stage of the value chain.

RESULTS AND DISCUSSION

Ginger production and productivity

The study site's overall ginger productivity has resulted at 15.43 Mt/ha (Table 1). This was discovered not aligned with the report of (MoALD 2021) because the survey was carried out in areas with high concentrations of ginger production (Malneta and Chande); the productivity of ginger in Salyan in 2021 was 9.90 Mt/ha while this study at 15.43 Mt/ha. Moreover, at a 1% significance level, the Productivity at Malneta (16.12) outperformed the Chande (14.75). The average household production of ginger was discovered to be 2,113.46 kg.

Price satisfaction level of respondents

Ginger producers were classified into low, medium, and high prices based on local collectors' prices. Table 2 shows that all responders (100%) fell into the low-price category. However, they didn't like the fee that was charged to them. Another impediment to manufacturers' comfort with low prices was a lack of market knowledge (Khanal 2018).

Quantity of ginger sold (fresh mature rhizome, *sutho*, and seed)

Three types of harvested ginger were offered for sale at the study site. They were seed, mature, and dried rhizomes (*sutho*). *Sutho* was more expensive per kilogram, followed by seed and freshly matured rhizome. Therefore, *sutho* was created to add value because it would generate more revenue than mature rhizomes (Acharya 2014). Moreover, 11,178.22 kg of fresh mature ginger was sold. It was discovered that Malneta (11,354.32) sold more fresh mature rhizomes than Chande (11,002.12). Malneta (772.20) sold more *sutho* than Chande (652.89), and the difference was significant at the 5% level. These results are consistent with those of (Acharya et al. 2019). This resulted from Malneta's high standards for and volume of ginger production (GRP 2017). Similar to this, Malneta (957.91) sold more seed rhizomes than Chande (114.867), which was significant at the 1% level (Table 3). Malneta is referred to as a "seed hub" since the highest-quality seed rhizomes are grown there (PMAMP 2018).

Revenue generated

The average gross profit from the sale of fresh ginger, dried ginger (*sutho*), and seed rhizome was discovered to be NPR 277,615.72. The income of farmers at Malneta (NPR 320,000.00) was 1% greater than that of farmers at Chande (NPR 235,231.45) (Table 4). These results concur with (Upadhyaya et al. 2020).

Revenue from *sutho* per hectare and contribution of *sutho* (in%) in total revenue

Sutho, a dried form of ginger, was created as a value addition to ginger because its price is much higher than that of fresh ginger and seeds. The revenue of farmers at Malneta (101,752.23=771$) was substantially more from selling sutho than farmers at Chande (68,012.34=461$). *Sutho* made an average contribution of 25.81% to the total revenue. Compared at Chande (23.76%), Malneta had a higher percentage value (Table 5). The results of this investigation are consistent with those of (Upadhyaya et al. 2020).

Marketing of ginger, means of transport, packaging, and way of grading

Out of all ginger growers surveyed, 64% of respondents sold their produce directly to local collectors, 12% sold to collection centers within or outside the district, and 24% sold to cooperative-owned collection centers. Porters were the primary mode of transportation, followed by pickups and tractors, due to the research site's mostly rocky topography. At the 1% significance level, 78.4% of respondents used porters to move their products, compared to 12.2% and 9.54%, who used tractors and pickup trucks, respectively. Moreover, 83% of respondents used *doko* for ginger for material transportation, and 17% used jute bags. Similarly, all responders (100%) manually graded their ginger (Table 6). The results of this observation are consistent with those of (Neupane et al. 2019).

Value-chain of fresh ginger

The average cost to produce one kilogram of fresh ginger was NPR 11.51 (Figure 2), resonating with the findings of (Acharya et al. 2019). When compared to findings from Gurung et al. (2021), where the cost of production was 35.67 NPR per kilogram, the cost of production of the study site was low. Organic ginger was used instead of chemical pesticides, which was credited with the inexpensive cost. To local dealers, producers sold their produce for NPR 16 per kilogram. Local vendors charged wholesalers (inside and outside the district) NPR 24 per kg for their produce while incurring NPR 22 per kilogram in transportation, NPR 2.5 per kg in storage, NPR 1.5 per kg in standardization (drying, cleaning, and packing), and NPR 40 per kg in end-user prices. A similar value-addition cost was found in the findings of (Gurung et al. 2021). The average price paid by consumers (March/April) was found to be NPR40 per kg in Srinagar bazaar. The price was reasonable compared to the off-season, where end consumers have to pay NRs 60-80 in the local market (PMAMP 2018). Retailer and end consumers had a retail marketing cost difference of NPR 8, wholesaler and retailer had a retail marketing cost difference of NPR 6, and collector and wholesaler had a retail marketing cost difference of NPR 6, resulting in a net margin difference of NPR 2, NPR 2, and NPR 8 between the actors mentioned above. The highest net margin was found between retailers and consumers (20%), followed by wholesalers and retailers (6.66%) and collectors and wholesalers (8.3%). The findings of (Gurung et al. 2021) can be used to confirm similar proportional outcomes. However, this study's producer share was somewhat lower than that of (Gurung et al. 2021), which showed a share of 62.71%. Similarly, a producer share of 66.5% was determined by (Maharatha et al. 2019) in the study of price behavior and marketing of Tomatoes in the same district. This might be due to a good, controlled marketing route.

Thus, the price spread was = retailers' price – farm gate price.
= 40 – 16
= NPR 24
Similarly, producers share = (16/40) *100
= 40%

Marketing chain

Farmers, local traders, wholesalers, retailers, and consumers comprised most of the study site's value chain actors (Figure 3). All the processes required to get farmers' fresh or processed products to customers nationally and worldwide are referred to as ginger marketing (ANSAB 2011).

Market functions

The main role in the value chain for ginger is the input function (supply), which helps farmers produce ginger. Rhizome seed, fertilizer, bio-pesticides, and other inputs that are accessible locally, as well as through agro-vets, GOs, and NGOs, can be used. Following production, local traders, cooperative collection centers, within and outside the district performed the collection function. The gathered rhizome was subsequently sold to wholesalers (regional) to retailers and eventually to end consumers in Nepal. Produce was sold to customers by retailers in Salyan, Surkhet, Nepalgunj, and other nearby communities' Local traders were also engaged in selling the produce directly to exporters. The role commission agent in ginger value-chain is inevitable. Commission agents collect fresh ginger from exporters of Nepal and sell to wholesalers in India. The channeling is done through Rupadiya (Nepal-India border) (Adhikari 2019). Little amount of gingers are processed by processors of Surkhet and shipped to nations like UAE, Netherlands. The report (ANSAB 2011; Gurung et al. 2021) also revealed similar findings.

Table 1. Ginger production and productivity at the research location

Variable	Overall (N=100)	Sharada Municipality, Malneta (N=50)	Siddhakumakh Rural Municipality, Chande (N=50)	Mean difference	t value	p-value
Productivity of ginger (Mt/ha)	15.43	16.12	14.75	1.37***	3.75	0.000
Production of ginger(kg)	2,113.46	2,221.35	2,005.57	215.78	0.54	0.511

Note: *** represents a 1% level of significance

Table 2. Price satisfaction level of the ginger producer at the research location

Variable	Sharada Municipality, Malneta (N=50)	Siddhakumakh Rural Municipality, Chande (N=50)	Overall (N=100)	Chi-square	p-value
Price satisfaction range					
Low	50(100)	50(100)	100(100)		

Table 3. Quantity of ginger sold (fresh mature rhizome, *sutho* and seed)

Variable	Overall (N=100)	Sharada Municipality, Malneta (N=50)	Siddhakumakh Rural Municipality, Chande (N=50)	Mean difference	t- value	p-value
Quantity of fresh mature ginger sold(kg/ha)	11,178.22	11,354.32	11,002.12	352.2	-0.52	0.601
Quantity of *sutho* sold(kg/ha)	772.20	901.51	652.89	248.62**	2.01	0.041
Quantity of seed(rhizome) sold(kg/ha)	537.40	957.91	114.87	843.02***	2.24	0.001

Table 4. Revenue generated from ginger

Variable	Overall (N=100)	Sharada Municipality, Malneta (N=50)	Siddhakumakh Rural Municipality, Chande (N=50)	Mean difference	t-value	p-value
Revenue from selling ginger/ha	277,615.72	320,000.00	235,231.45	84,768.55	6.34***	0.001

Note: *** represents a 1% level of significance

Table 5. Revenue from *sutho* per hectare and contribution of *sutho* (in%) in total revenue

Variable	Sharada Municipality Malneta (N=50)	Siddhakumakh Rural Municipality Chande (N=50)	Overall (N=100)	Mean difference	t-value	p-value
Revenue from *sutho*/ha	101,752.23	68,012.34	84,882.28	33,739.89**	2.05	0.041
Contribution (in%) of *sutho* in total revenue	27.87	23.76	25.81	4.11	0.87	0.360

Note: ** represents a 5% level of significance

Table 6. Marketing of ginger, means of transport, packaging, and way of grading

Variable	Sharada Municipality, Malneta (N=50)	Siddhakumakh Rural Municipality, Chande (N=50)	Overall (N=100)	Chi-square	P-value
Where (ginger selling)					
Directly selling to traders	33(66)	31(62)	64(64)	0.67	0.42
Collection center within /outside districts	7(14)	5(10)	12(12)		
Cooperative's own- collection center	10(20)	14(28)	24(24)		
Means of transport					
Porters	22(44)	35(70)	58(78.4)	28.31***	0.000
Horse/Mule					
Pickup	9(18)	5(10)	14(9.5)		
Tractor	18(36)	10(20)	28(12.2)		
Transporting materials					
Doko	43(86)	40(80)	83(83)		
Jute bags	7 (14)	10 (20)	17 (17)		
Way of grading					
Manually through hands	50(100)	50(100)	100(100)		
Through machines					

Note: *** represents a 1% level of significance. Figure in parenthesis indicates percentage

Table 7. Actors affecting the price of ginger in the research location

Factors	1	0.8	0.6	0.4	0.2	Rank
Local collectors	61	10	3	0	0	I
Wholesalers	0	27	43	3	1	III
Cooperatives	0	0	20	45	9	IV
Farmers	8	36	7	22	1	II
Exporters	5	0	0	7	62	V

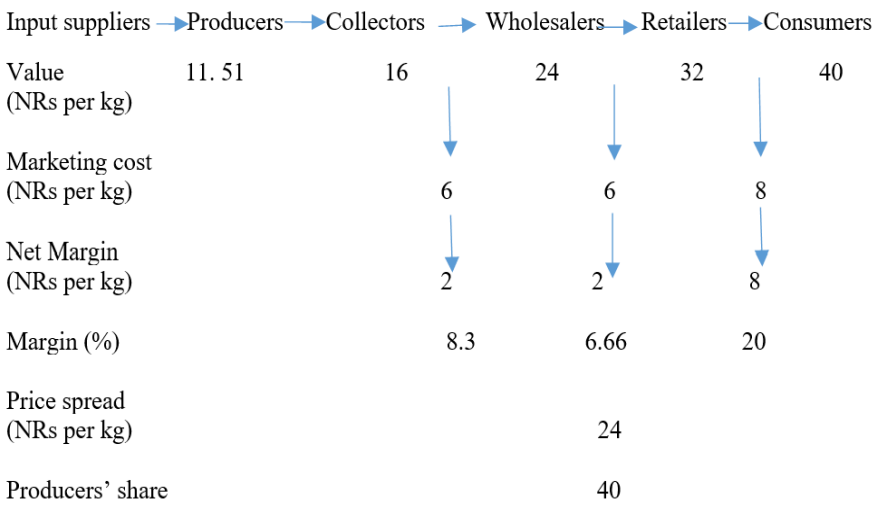

Figure 2. Marketing margin and producers' share of ginger in the research location

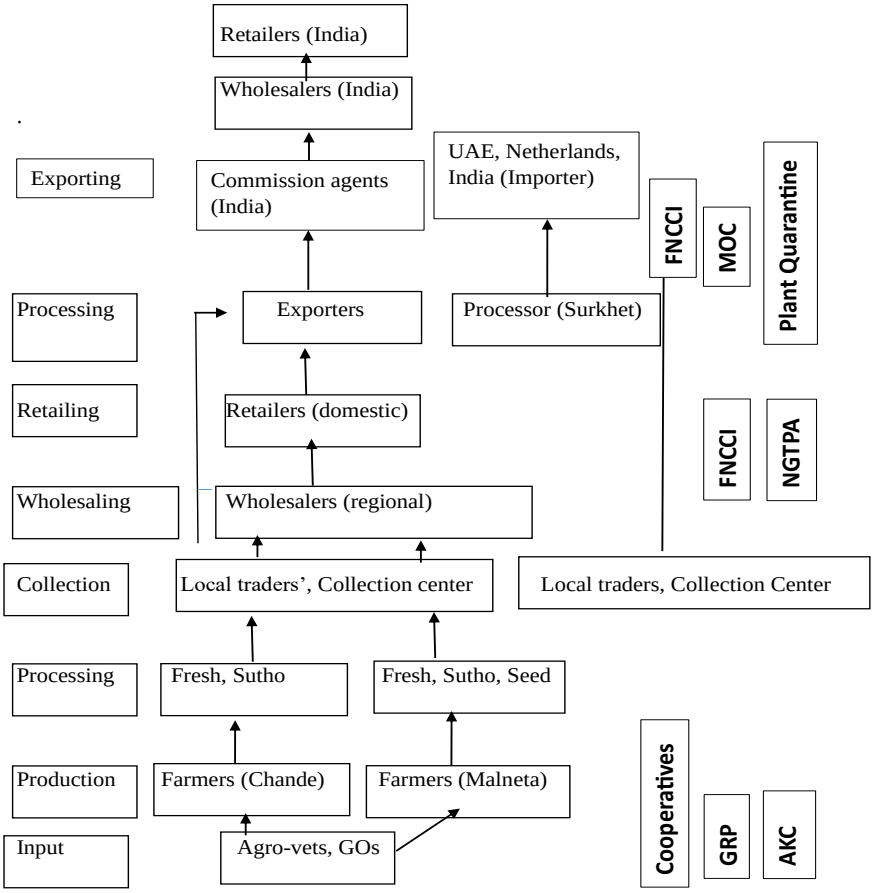

Figure 3. Value chain map of ginger in Malneta and Chande of Salyan District, Nepal (ANSAB 2011; Acharya 2014)

Actors

Producers

The producers of ginger are farmers who grow it for financial gain (income). They grow their farm by purchasing the appropriate materials from input providers.

Local traders/collectors

Local traders and collectors gather ginger for commercial purposes. Farmers immediately trade their produce for a set price with neighborhood collectors (Bellu 2013).

Wholesalers and retailers

The ginger was delivered to retailers or wholesalers from the collecting points. Many ginger products were sent to wholesalers of Salyan, Surket, and Nepalgunj by local traders and eventually India through commission agents to the wholesalers (India). This is aligned with the findings of (ANSAB 2011). Retailers are the players who eventually sell ginger to customers, whereas wholesalers are the ones who supply the stuff to them. Due to their involvement in numerous transactions, wholesalers provide retailers with poor profit margins per unit weight of the products. On the other hand, retailers transact little with a large profit margin for each product unit weight. These results are consistent with those from Chen et al. (2013).

Exporters

Local or international businesses that properly adhere to the quarantine can export ginger to markets outside Nepal.

Processors and end consumers

Moreover, less ginger gets processed in the research location due to insufficient processing factories and infrastructures (PMAMP 2018).

Enablers

Organizations, institutions, and other bodies that create an atmosphere beneficial to the value chain are enablers. Government agencies include the National Spices Development Program (NSDP), National Ginger Research Program (NGRP), Ministry of Agriculture and Livestock Development (MOALD), Department of Agriculture (DOA), Agriculture Knowledge Center (AKC), National Spices Development Program (NSDP), National Ginger Research Program (NGRP), Ministry of Industry, Plant Quarantine, Commerce, and Supplies (MOICS), etc.; the findings resonating with the value chain of orthodox tea of Illam enablers (Adhikari et al. 2017). The enablers mentioned above work for the value chain of ginger in the study site, and these results are consistent with those of (ANSAB 2011; Acharya 2014).

A project titled "Enhancing Sanity and Phyto-sanitary Capacity in Nepalese Ginger Exports through Public-Private Partnerships" is being launched by MOICS, MOALD, FAO, AEC, and FNCCI. Furthermore, the Nepal Ginger Production and Traders Association (NGPTA), a local partner, is helping to begin this project in Nepal.

Actors affecting the price of ginger

Several different parties influence the price of ginger (Table 7). Based on the farmers' perceptions, 5-point scale of extremely important, highly important, moderately low, relatively low, and low problems; 5, 4, 3, 2, 1 was used to rank the variables that influence the price of ginger. Local collectors were found to be the most significant and determining element, followed by farmers, wholesalers, cooperatives, and exporters, according to the value from the rank scale. This result is consistent with those of Khanal (2018).

In conclusion, ginger has huge potential in itself, and the Salyan district is a significant center for the production of ginger. Moreover, problems in price and marketing behavior problems dominate the ginger value chain in this district. Producers are unhappy with the price they are given, either. Due to a lack of industry and processors, dried ginger (*sutho*) commercial activity and revenue are deemed poor on the site. Increased *sutho* sales can lead to exponential growth in ginger's gross revenue. The value-chain analysis identifies five actors: producers, collectors, distributors, retailers, and consumers. Ineffective and lengthy marketing channels raise the cost of value chain operations, ultimately impacting consumers by increasing the marketing margin between producers and end consumers. Due to a bigger marketing margin that subsequently develops between the producer and end-consumer, the producer's share in income bargaining is minimal. Enablers that assist actors, including in exporting, must be aware of the prevailing problems and work effectively to boost the ginger sector's income.

ACKNOWLEDGEMENTS

This paper acknowledges Prime Minister and Agriculture Modernization Project (PMAMP), Ginger/ Turmeric Zone, Salyan, Nepal for facilitation during the research and Agriculture and Forestry University (AFU), Nepal, for providing an immense opportunity for conducting research.

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