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Research Article

Marketing of Large Cardamom in Mechi Hills, Nepal

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Abstract

Large Cardamom is cultivated in the Himalayan region of Nepal, India and Bhutan. Nepal is the world's top exporter. A field survey study was carried out in Ilam, Panchthar, and Taplejung districts of to know the existing marketing and trade situation of LC in the Mechi hill districts. The studied three districts are known to produce almost 55% of the total produced in the country. There are two to five steps on marketing channel. Quantity of export was decreasing trend with Compound Annual Growth Rate of -3.25%. The value of export was increasing significantly from NRs. 1.34 billion in 2008/9 to 4.85 billion in 2017/18 with Compound Annual Growth Rate of 6.63%. The market price was also increased significantly with Compound Annual Growth rate of 7.45%. There were more than 20 importer countries exists but 99 percent exported to India and from India re-exported to the other countries. There are 9 district level markets hubs which supply to Birtamod wholesale market and finally exported to India via Rani, Biratnagar customs which is the only export point to India. The major constraints of marketing and trade were; price fluctuation; dependency on Indian market; lack of provision to direct export to Pakistan, Bangladesh and other countries; lack of price fixation mechanism, accredited laboratory, insufficient marketing research, government support for trade promotion; absence of insurance policy on transport; and adulteration. The government should focus to overcome these constraints for the better marketing and trade of Large Cardamom in the country.

Keywords: Compound Annual Growth; Export; Market Channel; Price Information; Trade Flow

Introduction

Large Cardamom (*Amomum Sabulatum*, Roxb.) is a perennial herbaceous crop belonging to Zingiberaceae family and frequently referred to as Black Gold and Queen of Spices. It is known as Alaichi in Nepal (Shrestha, 2018). It is also known as hills cardamom, Bengal Cardamom, Greater Cardamom, Indian Cardamom, Nepal Cardamom, Winged Cardamom, and brown cardamom (Tangjang and Sharma, 2018). It is the oldest indigenous prices of the eastern Himalayas. It is mainly cultivating in Nepal, Bhutan and Indian states comprising of Sikkim, Utranchal and Darjeeling district of West Bengal (Bhutia *et al.*, 2018). This spice is the world's third-most expensive after saffron and vanilla. Nepal is by far the world's producer and exporter Large Cardamom (LC). The Government of Nepal has selected it as priority sector part of the Nepal Trade Integration Strategy (NTIS) and has been recognized as one of the major export potential commodity of Nepal as per NTIS (MoCS, 2010; MoCS, 2016). Eastern hills of Nepal are incredibly suitable for the production of high quality LC where about 70,000 households are benefitted from it (Karki *et al.*, 2009). Sikkim is the largest producer of large cardamom in India and second largest in the world, after Nepal (Pratap *et al.* 2014). It is climate sensitive crop as it strictly requires cool, moist soil, humid under shaded area (Yadav *et al.*, 2015).

It is grown in hilly region, which is previously limited into eastern hills of Nepal and is one of the major sources of income of eastern hills farmers. However, in recent years, it has been spread over the suitable area of hill districts all over Nepal and now-a-days its cultivation has reach over 51 districts (MoALMC, 2017) which was 41 in year 2013/14 (MoAD, 2014) and 37 in year 2007/08 (MoAC, 2008). But about 73% percent of total national production still comes

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from four districts (Taplejung, Panchthar, Ilam and Sankhuwasabha) in eastern Nepal (MoAD, 2015b). Economic yield of LC starts from 3rd year onward after planting and its optimal yield period is 8-10 years. It was grown under 125111 ha of land and the yield was 6528 tons with productivity of 522 kg ha^{-1} (MoALMC, 2017; NSCDP, 2017).

LC is used as a spice and also in several Ayurvedic preparations including the Unani system of medicine. It possesses carminative, stomachic, diuretic and cardiac stimulant properties and is also a remedy for throat and respiratory trouble. The essential oil is reported to have antimicrobial properties. The seeds have a pleasant aromatic odor for which can extensively be used for flavoring vegetable curries and many food preparations in India. The decoction of seeds is used as a gargle in infection of teeth and gums. Seeds are considered as an antidote to either snake venom or scorpion venom and also used as preventive as well as curative measure for throat troubles, congestion of lungs, inflammation of eyelids, digestive disorders and in the treatment of pulmonary tuberculosis (Bhutia *et al., 2018)*.

LC finds its use mostly in spicy non-vegetarian cuisines such as chicken or mutton biryani rice dishes particularly in Muslim community. Chinese use it in Szechuan dishes and the Vietnamese in noodle soup. It is not used for favoring tea and coffee (ITC, 2017). According to MoAD (2015b), Nepali LC has distinctly more Smokey, though not bitter, aroma with coolness similar to mint. It is common ingredient in Indian cooking and often used in baking in Nordic countries, such as in the Finish sweet bread pulla or in the Scandinavian bread Julekake. In the middle-east LC powder is used as a spice for sweet dishes as well as traditional flavoring in coffee and tea. In South Asia, cardamom is often used in traditional Indian sweets and in tea. It is sometimes used in garam masala for curries. It is occasionally used as a garnish in basmati rice and other dishes. Individual seeds are sometimes chewed and used in much the same way as mouth refresher. It is even used by confectionery; its Eclipse Breeze Exotic Mint packaging indicates that it contains "Cardamom to neutralize the toughest breath odors". It has been known to be used for gin making and in tisanes.

Trade has not thumb of rules. It is the complex phenomenon. Export and import of the commodity are varying place to place and time to time. Thus, this study was aimed to understand and explain the existing marketing and trade situation of LC in the Mechi hill districts along with prospects and constraints and finally recommend for the protection and promotion of the livelihoods of several thousands of people in the value chain.

Materials and Methods

Selection of Study Area and Sample

Three districts of Mechi hills namely Taplejung, Panchthar, and Ilam were purposively selected based on the area coverage, production, number of growers, scale of commercialization, access to major road corridors of the area and link to the market centers.

Methods and Techniques of Data Processing and Analysis

The data collected through both secondary and primary sources was pretested, edited, coded, processed and analyzed by using computer software packages like the Statistical Package for Social Science (SPSS) and Microsoft Excel.

Sources of Information

Primary Source of Information

The primary data were collected with LC growing farmers, input suppliers, processors, traders, transporters, and exporters of the Mechi zone includes Taplejung, Panchthar, Ilam and Jhapa districts. Similarly, participants of key informant interview and focal group discussion were also the primary source of data for this investigation.

Secondary Sources of Information

Several journals, proceedings, thesis, reports and other publication were collected and used as reference materials. The statistical and other report of Ministry of Agricultural and Livestock Development (MoALD), District Agriculture Development Office (DADO), Nepal Agricultural Research Council (NARC), Trade and Export Promotion Centre (TEPC), Federation of Large Cardamom Entrepreneurs Associations (FLCEN), and Internet for secondary information were consulted data used and analyzed.

Interview Schedule

The interview schedules were the major instrument used for gathering of information from the respondents, the questionnaire were developed first in English and then translated to Nepali language, before administering to the respondents. The interviews schedules were first pre- tested with respondents.

Focus Group Discussion (FGD)

FGD is one of the most popular qualitative research methods. Three FGD were conducted in for the study. The tool helped to understand the present scenario of the LC marketing and their problems being faced by the farmers and concerned stakeholders and the way forward.

Key Informant Interview (KII)

KII is an in-depth qualitative interview of selected people aimed to gather information about a particular subject matter. Six KII including Traders at District level and road head level, FLCEN, transporters, Exporters of the study districts were interviewed to gather information so as to

triangulate the information related to activities of LC marketing. The interviews were informal and conversational, but were done carefully to address the research objectives.

Compound Growth Rate

Growth of any variable indicates its past performance. The analysis of growth is usually used in economic studies to determine the trend of a particular variable over a period of time (Kumar, S. and Singh, S. 2014). As it indicates the performance of the variable under consideration, it can be used to make interpretations and to evolve policy decisions (Timsina, K.P. *et.al*. 2015).

The exponential compound annual growth rates are estimated by using log linear functions on the time series data on area, production and productivity for LC. The semi log exponential functional form is used to analyze the trend in growth rate, which is one of the appropriate functional forms to estimate the growth rate. That is, the growth rate is estimated by using the following semi log functional form:

$\log Y_t = a + bt$ ..... (1)

This equation (1) can be elaborated in details as:

$Y_t = Y_o (1 + r)^t$..... (i)

Taking log on both sides, we get

$\text{Log } Y_t = \text{Log } Y_o + t \text{ Log } (1+r)$..... (ii)

Equation (ii) can be rewrite as

$Y = a + bt$..... (iii)

Where $Y = \text{Log } Y_t$; $a = \text{Log } Y_o$; $b = \text{Log } (1+r)$,

In equation (iii) Y_t = area/production/productivity, as the case may be, of Large Cardamom as discussed above

a = constant

t = Time variable in year (1, 2,……..n)

b = Regression Coefficient that shows the rate of change or growth rates in a series

The annual compound growth rate (s) can be worked out by using:

Antilog (b) = Antilog (log (1+r)).

Antilog (b) =1+r

and r = Antilog b-1

When multiplied by 100, it gives the percentage growth rate in sales rice rate, and export quantity and value of LC. That is, CAGR% = r = (Antilog B-1) x100.

Result and Discussion

Area, production and productivity in Nepal

While over viewing the data from fiscal year 1994/95 to 2016/17, the area under large cardamom cultivation is known to increase in a slower rate and similar is in the case of production and productivity. In the fiscal year 1994/95, total area under cultivation of large cardamom was recorded to be 8780 ha with the total production of 3010 t and productivity of 343 kg ha^{-1}. Similarly, 6528 t produced from 12,511 ha of land with the productivity of 522 kg ha^{-1} in the year 2016/17 (Annex 1). However, the total crop planted area of LC in 2016/17 was 17,002 ha (MoALMC, 2017).

Area, production and productivity in Illam

Both the area and production of LC in Ilam district was found in decreasing order. The area under cultivation has declined from 2106 ha in 2009/10 to 1200 ha in 2016/17. Similarly, total production was declined from 963 in 2009/10 to 576 tons in 2016/17 (Fig.1).

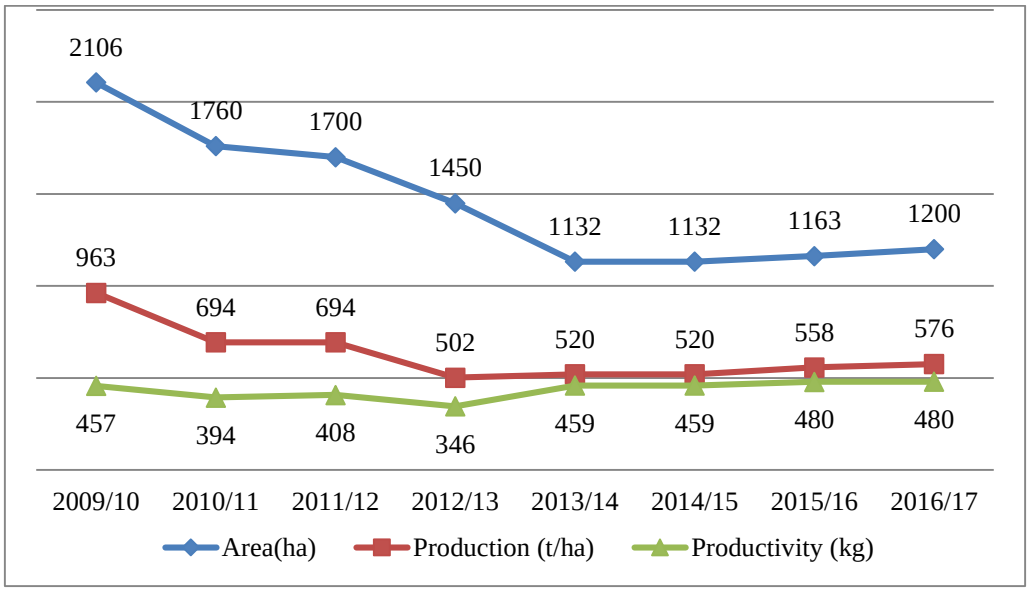

Fig. 1: Area (ha), production (tons), and productivity kg ha^{-1} of LC in Ilam district (MoAD, 2009 to 2016)

Area, Production and Productivity in Panchthar

There was a slight increment in area under cultivation of LC which is 1605 ha in 2009/10 to 1737 ha in 2016/17 and almost production was recorded from 654 in 2009/10 to 798 tons in 2016/17 (Fig. 2).

Area, production and productivity in Taplejung

In the fiscal year 2009/10, total area under cultivation of LC was recorded to be 2925 ha with the total production of 1316 tons and productivity 450 kg ha^{-1}. Similarly, 2490 tons of LC was produced under 4150 ha of land with the productivity of 600 kg ha^{-1} in the fiscal year 2016/17 (Figure 3).

Export Analysis of Large Cardamom

The amount of export quantity has found in decreasing order from 9820 tons in 2008/9 and 5402 tons in 2017/18. However, the value of export from is increasing drastically from NRs. 1.343 billion in 2008/9 to NRs. 4.849 billion in 2017/18 (Fig. 4). ITC, 2017 also reported that, data provided by FLCEN show that export of LC from Nepal decreased to 2930 tons valued NRS. 3.84 billion in 2014/15. However, export value has not decreased in the recent past due to continuous increases in the world market price. Bhutia, et al., 2017 also stated that, from 2013/14 export volume of LC started decreasing and export value started increasing in India.

Analysis of exported quantity of LC as well their value shows that, the Compound Annual Growth Analysis (CAGR) of quantity exported has negative with (minus) -3.25% (p value 0.0317). But, in case of CAGR of value exported shows that, it has significantly increasing with 6.63% with p value 0.001372 (Table 1).

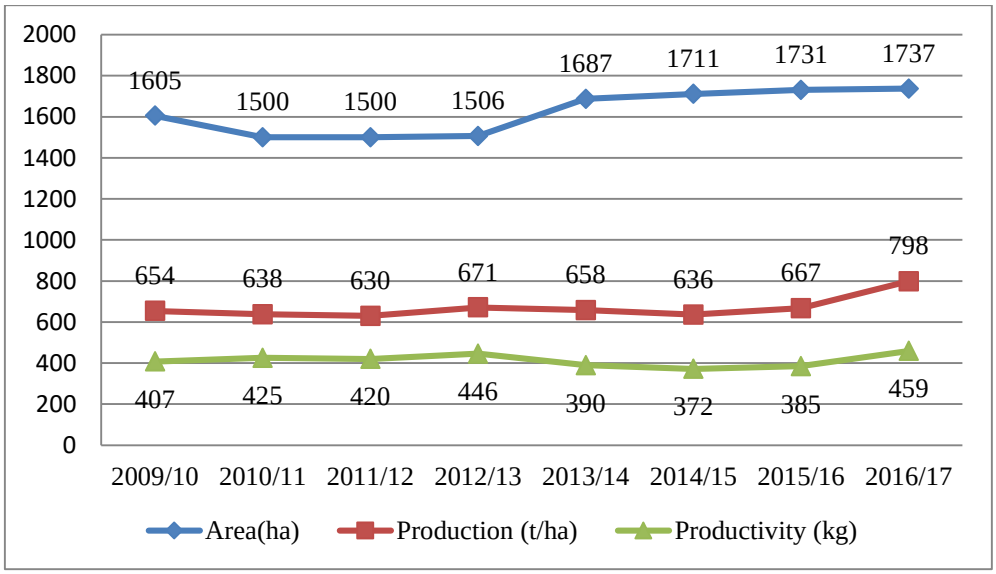

Fig. 2: Area (ha), Production (tons), and Productivity (kg ha^{-1}) of LC in Panchthar district (MoAD, 2009 to 2016)

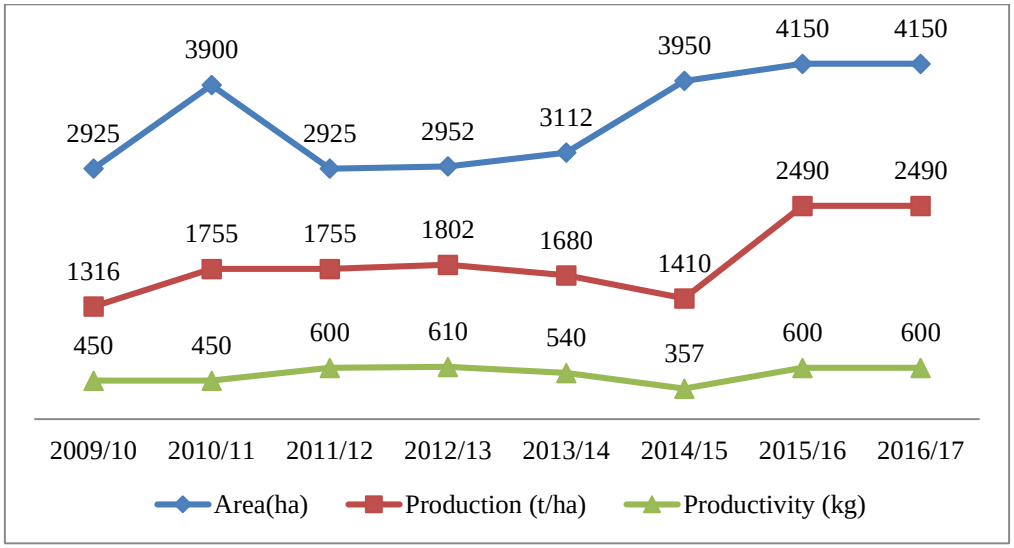

Fig. 3: Area (ha), production (tons), and productivity kg ha^{-1} of LC in Taplejung district (MoAD, 2009 to 2016)

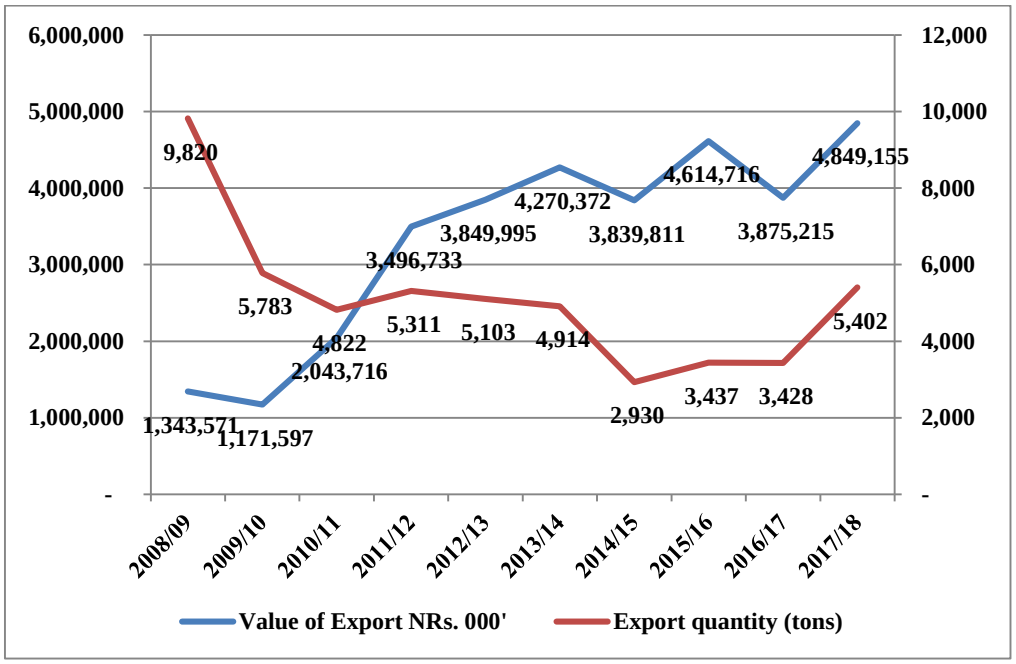

Fig. 4: Export quantity (tons) and Value of export of LC from 2008/09 to 2017/18

Source: Trade Export Promotion Centre, Lalitpur, Nepal

Table 1: CAGR analysis of LC export quantity (tons) and value (NRs. 000') of export

Year	Export quantity	Value of Export	No.	Log change Quantity	Log change Export Value
2008/09	9,820	1,343,571	1	3.992132	6.12826
2009/10	5,783	1,171,597	2	3.762181	6.06878
2010/11	4,822	2,043,716	3	3.683225	6.31042
2011/12	5,311	3,496,733	4	3.725208	6.54366
2012/13	5,103	3,849,995	5	3.707809	6.58546
2013/14	4,914	4,270,372	6	3.691425	6.63047
2014/15	2,930	3,839,811	7	3.466918	6.58431
2015/16	3,437	4,614,716	8	3.536225	6.66415
2016/17	3,428	3,875,215	9	3.535025	6.58830
2017/18	5,402	4,849,155	10	3.732555	6.68567
CAGR	-3.25056	6.627876			
F value	6.748727	22.95099			
P value	0.031725	0.001372			

Source: TEPC and analysis by researcher, 2018

Export Amount and Destination

Data received from TEPC calculated and analysed. It revealed that, the 99.32% LC was exported directly to India and remaining quantity was exported to other country such as Pakistan, UAE, Singapore, Bangladesh, China PR and other countries (Table 2). Details of the quantity exported to each country from 2008/09 to 2017/18 are given in Annex 2. Singh and Pothula, 2013 stated that about 90% of the produced in Nepal is exported to India. However, from India it was re-exported to the Pakistan, the middle-east and other countries where high demand and high price margins reflect the special preference and taste for Nepali origin. This was also supported by the ITC, 2017. Bhutia et al., 2017 also reported that, in year 2015/16 an estimate of 3410 tons of LC imported by India and in the same year India exported 600 tons. Bhutia et al., 2018 also reported that 90% of the LC produced of Nepal has been exported to India and less than 9% of the product was directly exported to Afghanistan, Pakistan, the United Arab Emirates (UAE), and other Gulf countries.

Table 2: Total export quantity (tons) of LC to different country in 10 years (2008/09 to 2017/18)

SN	Country	Export quantity
1	India	50,603.92
2	Pakistan	166.65
3	U.A.E.	140.65
4	Singapore	11.30
5	Bangladesh	10.10
6	China P.R.	8.72
7	Ukraine	5.00
8	UK	3.00
9	Canada	1.00
10	Australia	0.42
11	Japan	0.26
12	France	0.22
13	Korea R	0.12
14	Germany	0.08
15	Nicaragua	0.05
	Total	50,951.48
	% Export to India	99.32

Source: TEPC and analysis by researcher, 2018

Price Information

Price of LC normally determined by Indian importers and subsequently it reaches to Birtamod wholesale market, districts markets and village level markets determine their respective prices. According to the traders of study districts stated that, the price of the LC within the country for the traders and producers are based on the grading of it. The LC are generally grading in three categories namely, Jumbo Jet (JJ), Standard (SD), and *Chalan Chalti* (CC). These grading are based on the i) size of the capsule; ii) tail cutting; iii) Moisture content; and iv) colour and appearance of the capsule. In general speaking, large the size the better will be price, cutting the tail get better price, optimum moisture at 12% get better price and light brown colour of capsule get better price.

The wholesale price of LC was found from the FLCEN, Birtamod, Jhapa from 2006/07 to 2016/16. Table 3 revealed that, the wholesale sales price at Birtamod wholesale market was NRs. 100 and 500 kg^{-1} respectively of minimum and maximum with average of NRs. 300 in 2006/07 which increased every year and reached to minimum of NRs. 2050 and maximum 2250 kg^{-1} with average of 2150 kg^{-1} in 2014/15. It reduced in 2015 and again rose in 2016/17. However, while we analysed the CAGR, it increased significantly with 7.5% (p value 0.004).

Marketing Channel

There are two to six steps and eight types of marketing channel in the all studied districts. The marketing steps increases with distance of production area. It also depends on transportation facility. If producers need to transport on human backpack they sold to the local/village vendor. The marketing steps also increases with lower volume of production. Lower the volume production, farmers sold their produce either to local vendor or road head trader. The personal contact of producers and traders is also decides for the selecting marketing channel. The major marketing channel and steps is presented in below:

Producer-Village vendor-Road head trader-District Trader - Wholesale Trader-Exporter

Producer-Road head trader-District trader-Wholesale trader-Exporter

Producer-Road head trader-Wholesale trader-Exporter

Producer-Road head trader-Exporter

Producer- District trader-Wholesale trader-Exporter

Producer- District trader- Exporter

Producer-Wholesale trader-Exporter

Producer-Exporter

Table 3: Annual Price of LC kg^{-1} at Birtamod wholesale market

Year	Minimum	Maximum	Average	Log Change
2006/07	100	500	300	2.477121
2007/08	500	1,075	788	2.896251
2008/09	1,050	1,450	1250	3.09691
2009/10	1,125	1,575	1350	3.130334
2010/11	1,125	1,800	1463	3.165096
2012/13	1,175	1,825	1500	3.176091
2013/14	2,000	2,950	2475	3.393575
2014/15	2,050	2,250	2150	3.332438
2015/16	1,700	2,500	2100	3.322219
2016/17	1,500	2,000	1750	3.243038
CGR	7.448207			
Adjusted R^2	0.617533			
F value	15.53147			
P Value	0.00429			

Source: FLCEN, Birtamod, analysis by researcher

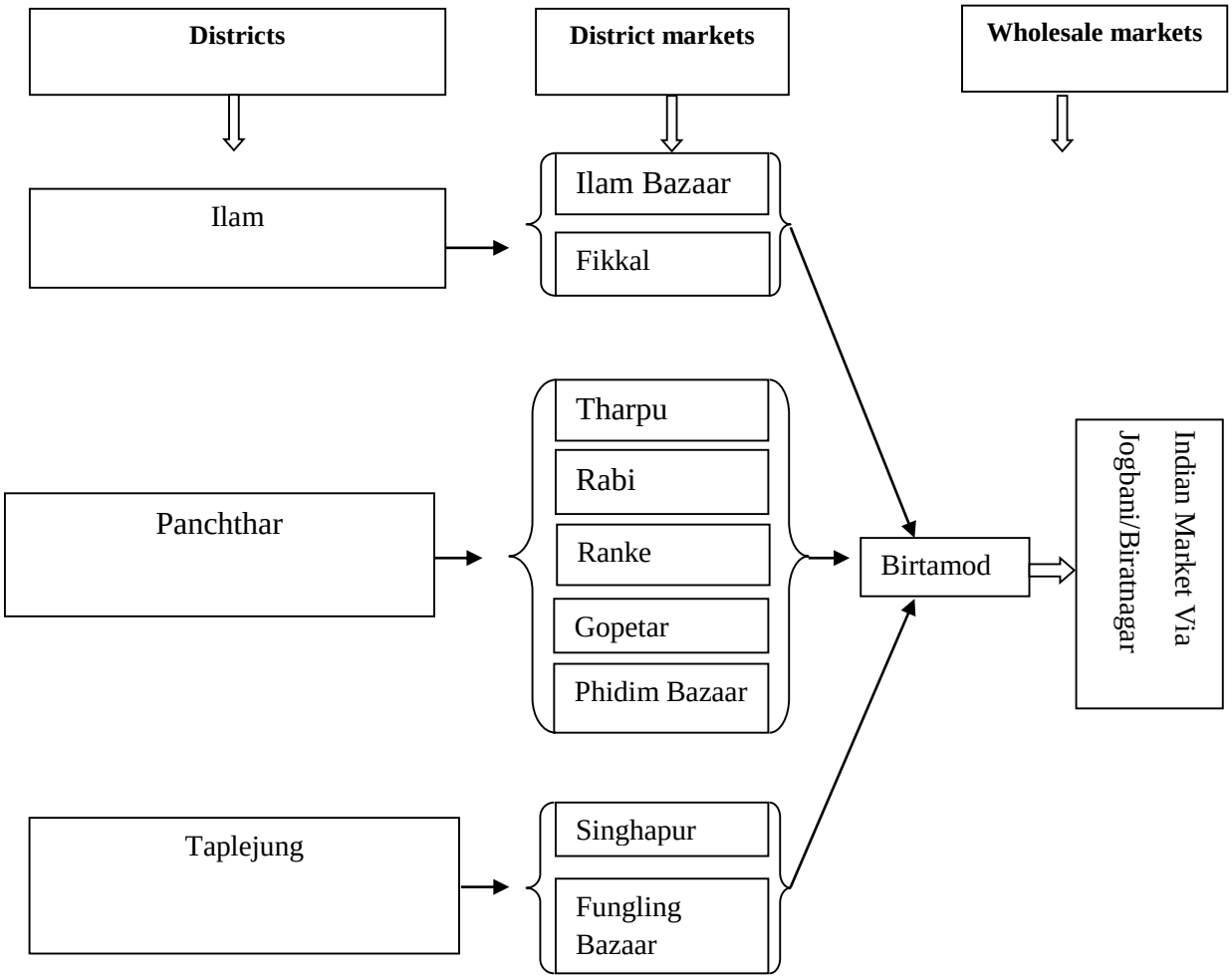

Fig. 5: Cumulative Trade Flow Map of Large cardamom in Mechi hill districts

Source: Field survey and FGD, 2017

Trade Flow Analysis

All the district markets of the respective districts supply their collected LC finally to the Birtamod wholesale market and exporter. The exporter of Birtamod market finally export to New Delhi, Kolkata, and Siliguri market of India via Biratnagar, Rani Custom which is the only export point from Nepal. It is the established marketing route for trade. Being the only one export point, Biratnagar in Nepal and Jogbani in India has advantages to international approach (Fig. 5).

Constraints Analysis

Constraints analysis found following constraints for marketing of Large Cardamom:

1. Price of LC capsules are highly fluctuating at farm gate as well as Birtamod whole sale market.
2. Heavy reliance on Indian market and few importers particularly Siliguri of West Bengal.
3. Limited number of wholesalers and exporters in Nepal, particularly in Birtamod market of province 1.
4. Lack of price fixation mechanism and information mechanism to farmers as well as traders.
5. Laboratory testing for Maximum Residual Level (MRL) is quite costly and time taking.
6. Lack of information on standards requirements such as grading, packaging, branding and SPS compliances including MRLs for the overseas markets
7. Insufficient understanding of market characteristics and trends in the final destination
8. Insufficient market research to identify new market, opportunities and distribution channel
9. Lack of government support for trade promotion activities
10. Absence of insurance policy on transport of LC for export
11. Farmers are not aware about the insurance policy on large LC cultivation
12. Problems of transportation from farm gate to village and village to district level
13. There are no auction market at Nepal
14. Lack of technical knowhow to farmers on postharvest handling like curing technology, tail cutting, grading and packaging
15. Lack of modern curing technology as well as modified curing kiln (*Bhattai*)
16. Lack of collection markets with improved storage facilities

17. Adulteration of wild cultivars like *Churumpha* as well as inert matter
18. Limited capacities of the traders to promote pink LC to traditional buyers
19. No LC marketing policy
20. Lack of appropriate provision in bilateral agreements for market access to Pakistan, Bangladesh and other importing countries
21. Lack of promotion of Big Everest Cardamom collective trademark in export destinations

Conclusion and Recommendations

Nepal is world largest producer and exporter of large cardamom. It is one of the major exportable commodities of Nepal. It is lucrative business of all value chain actors and major cash crops of more than 67,000 farmers in the hills.

Research and development work should be done to facilitate the LC mareting system in Nepal. For this purpose following recommendation has been made.

- Government should finalize and implement LC research and development policy on which is under process.
- Government should give special emphasis and give priority on marketing research and allocate sufficient budget for implementation.
- Develop collaboration partnership between FLCEN, TEPC, CDC, NARC and TU/KU for the development of marketing.
- Promote Everest Big Cardamom in the international by organizing international marketing training for traders through FLCEN by TEPC
- Strengthen Exporters ability to handle international export procedures through organizing training to traders and exporters on export documentations, packaging, trade finance, and insurance.
- Disseminate technology on curing technology, quality management, grading, and packaging according to the demand of international markets.
- CDC and Agriculture Knowledge Centre (AKC) involving FLCEN and technical collaboration with NARC should set a consortium of farmers, traders, development agencies and dryer (*Bhatti's*) manufacturer to design, assemble, install and test the performance of modern *Bhattis*
- Organize training on good management practices related to the installation and use of modern *bhattis* (dryer) in through FLCEN in technical collaboration with NARC, CDC and AKC.
- Improve DFQCC laboratory and establish internationally accredited laboratory at Birtamod for facilitating MRL testing at Nepal.
- Price determination mechanism should be established negotiated between farmers/producers association, collectors and traders through FLCEN.
- Establish warehouse at Birtamod market.

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Annex 1: Area (ha), Production (tons), and Productivity (kg ha^{-1}) of LC in Nepal

Year	Area (ha)	Production (t)	Productivity kg ha-1
1994/95	8,782	3,010	343
1995/96	9,252	3,622	391
1996/97	9,553	4,456	466
1997/98	9,725	5,146	529
1998/99	9,770	4,335	444
1999/00	10,627	6,530	614
2000/01	10,668	6,080	570
2001/02	10,840	6,179	570
2002/03	11,095	5,880	530
2003/04	11,220	5,983	533
2004/05	11,347	6,086	536
2005/06	11,498	6,647	578
2006/07	11,712	6,950	593
2007/08	12,015	7,087	590
2008/09	11,849	7,037	594
2009/10	11,766	5,232	445
2010/11	12,584	5,517	438
2011/12	11,665	6,026	517
2012/13	11,434	5,753	503
2013/14	11,501	5,225	454
2014/15	12,460	5,170	415
2015/16	12,120	6,440	531
2016/17	12,511	6,528	522

Source: MoAD, 2011 to 2017

Annex 2: Export quantity (tons) of Large Cardamom to different country from 2008/09 to 2017/18.

Country	Exported Quantity (tons) in different year										
	2008/09	**2009/10**	**2010/11**	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**Total**
India	9,614.90	5,700.91	4,809.55	5,273.84	5,099.64	4,911.95	2,930.29	3,436.93	3,427.68	5,398.21	50,603.92
Pakistan	145.55	21.10									166.65
U.A.E.	50.00	61.10		28.55						1.00	140.65
Singapore			11.30								11.30
Bangladesh	10.00									0.10	10.10
China PR			1.12		3.00	1.52		0.43		2.65	8.72
Ukrain				5.00							5.00
UK				3.00							3.00
Canada				1.00							1.00
Australia						0.42					0.42
Japan		0.26									0.26
France							0.02		0.20		0.22
Korea R					0.12						0.12
Germany							0.03			0.05	0.08
Nikaraguwa					0.05						0.05
Total	9,820.45	5,783.37	4,821.97	5,311.39	5,102.81	4,913.89	2,930.34	3,437.36	3,427.88	5,402.01	50,951.48
% India	97.91	98.57	99.74	99.29	99.94	99.96	100.00	99.99	99.99	99.93	99.32