

MARKETING EFFICIENCY OF VARIOUS CHANNELS FOR DISPOSAL OF NATURAL RESINS IN TRIBAL AREAS: A CASE STUDY OF CENTRAL AND NORTH EASTERN PLATEAU ZONES OF INDIA

R.K. Yogi¹, Alok Kumar², A.K. Singh³ & Nirmal Kumar⁴

The present study was carried out to understand the existing marketing mechanism disposal pattern of natural resins and their marketing efficiency in a agro-climatic sub zone of Central and North Eastern Plateau of India. A total of 100 stakeholders including lac cultivators belonging to small, medium and large category of households; small traders, big traders, wholesalers and processors were selected randomly and interviewed for data collection. In the study area eight channels were operating and in a little quantum, LAMPS were also initiated in the procurement of kusmi lac at Minimum Support Price (MSP) as announced by Ministry of Tribal Affairs, GOI, New Delhi. The study found that the marketing efficiency across various lac marketing channels ranged from 0.93 in Channel-I to 2.07 in Channel-V during 2012 and as a result of the consequences of policy intervention by the government it found to range from 0.98 in Channel-I to 8.77 in Channel-VIII in 2016. In lac marketing, traders faced difficulty in storage and impurity of raw materials. Processing units were uncomfortable with unavailability of raw materials on time, unavailability of skilled labour, poor power supply and volatile market price. Lack of organized lac market was also observed in the study area. Institutions and government agencies should provide information and market support services to the lac growers. Positive approach should be taken by government to promote the domestic as well as overseas demand of lac based high value products. Financial assistance may be provided by financial agencies to safeguard the growers, trader and small lac processing firms.

Keywords : *Disposal Pattern, Market Functionaries, Market Margin, Marketing Cost, Marketing Efficiency.*

Introduction

The average annual revenue of Government from Minor Forest Produce (MFP) is more than L 20 billion, contributing about 50% of household income particularly for 20 to 30 % of tribal population in rural sector. Potentially around 3000 species of forest products are found to be useful, but only 126 have developed marketability (Maithani, 1994). Around

¹ Scientist (Agril Econ), TOT Division, ICAR-Indian Institute of Natural Resins and Gums, Division of Agricultural Engineering, Ranchi-834010 (Jharkhand), email: yogindri@gmail.com, Mob: +918521807288

² ICAR-National Academy of Agricultural Research Management, Hyderabad (Telangana)

³ ICAR-National Research Centre on Integrated Farming, East Champaran (Bihar)

⁴ ICAR-Indian Institute of Natural Resins and Gums, Ranchi (Jharkhand)

50% of forest revenues and 70 % of forest based export income of the country come from MFPs. Thus, MFPs form one of the important means of livelihood security for many tribal communities (Rao, 1987; Gauraha, 1992; Chopra, 1993; Mallik, 2000; Sarker & Das, 2007; Singh, Singh, Yogi, Jaiswal & Singh, 2015).

Lac is Nature's gift to mankind and the only known commercial resin of animal origin. It is secreted by an insect *Kerria lacca* (Kerr). Two distinct strains (*kusmi* & *rangeeni*) of the lac insect are known in India. The *kusmi* strain thrives best on the *kusum* tree (*Schleichera oleosa*). Similarly, the *rangeeni* strain is raised practically on *palas* (*Butea monosperma*), *ber* (*Ziziphus mauritiana*), etc. With increasing universal environment awareness, the importance of lac has assumed special relevance in the present age, being an eco-friendly, biodegradable and self-sustaining natural material. Sustainability crucially depends on the institutions i.e. how successfully the policies are being adopted (Kumar & Kumar, 2017). Thus, natural resins including lac are the source of livelihood of tribal and poor inhabiting forest and sub-forest areas. It makes a small but significant contribution to the foreign exchange earning of the country, but the most important role that the lac plays in the economy of the country is that roughly 3-4 million tribal people, who constitute the socio-economically weakest link of Indian population earn a subsidiary income from its cultivation.

India is the largest producer of lac in the world which supplies more than 80% of the overseas demand for lac and its value added products. Jharkhand ranks first in production of sticklac followed by Chhattisgarh, Madhya Pradesh, West Bengal and Maharashtra. These five states contributed around 95% of the national lac production. The country's production of lac was 16,978 Mt in 2014-15 (Yogi, Kumar & Jaiswal, 2017). When the lac matures, it fetches farmers ready cash. Sticklac (crude lac) produced in the country is processed in a large number of factories organized on a cottage industry scale to produce either the seed lac or shellac, before it is exported. These manufacturing centers are spread over the lac growing areas. Jharkhand state contributes around 39% of national lac production. Out of seven main lac producing districts, Ranchi still producing highest followed by Simdega, Gumla, Khunti, West Singhbhum, Palamau, Garhwa, Latehar and others (Table 1). Around 110 million lac hosts are being exploited and more than 4 lakhs families of the state are involved in lac cultivation activity. Subsequently, it has capacity to engage about 35-40 million persondays/year. Consequently, this activity safeguards the forest dwellers from migration for livelihood security. Forest department, Jharkhand have 16 broodlac farm of *kusum* and *palas* tree in various districts.

In 1950s, the average production of lac in India was about 42320 Mt and onward decline trend in lac production during 1970s (52 %), in 1980s (19 %) and 1990s (4 %) was observed. However, in revival period of 2000s, 24% increase was recorded. It is assumed that there are some bottlenecks hampering the growth of the sector. Marketing plays a vital role not only in stimulating production and consumption, but also in accelerating the pace of economic development. Ramasamy (2016) opined that still large section of farmers in India is experiencing the same old ordeals which they have undergone at the time of beginning of planned development. Marketing development schemes have only marginally benefitted them. An efficient marketing system minimizes costs, ensures remunerative price to the lac production sector and provide good quality lac and its value added products to the buyers/users at reasonable price. Lac as such has got utilization in the various areas like surface coating, adhesives, electrical, food, leather, pharmaceuticals and cosmetic industries (Prasad, 2011). Lac can be put into the variety of applications and the domestic consumption of lac can be further enhanced from 15 to 50% (Lal, 2011). As the tribal agriculture is mostly on primitive lines and with meager irrigation sources, it is inevitable for the tribal farmers/ laborers to draw their subsistence largely by collecting and marketing of Minor Forest Products (MFPs) from the forests (Naidu, Ravi Kumar & Murthy, 2003). In this study the socio economic profile, market margin, marketing efficiency and constraints faced by stakeholders were ascertained.

The concept of marketing efficiency and integration has retained and increased importance over recent years, particularly in developing countries where it has potential application to policy questions regarding government intervention in markets (Alexander & Wyeth, 1994). Behura and Pradhan, (1998) opined that the price changes in a market will be transmitted to other markets. Data on prices has been central in making inferences about market efficiency (Palaskas & Harriss-White, 1993). In the sixties and the seventies, the methodological work on the measurement of pricing efficiency in agricultural commodity markets focused on pair-wise comparisons and price series correlation is regarded an efficient indicator of market integration (Lele, 1967, 1971; Thakur, 1974). Although, other school including Heytens (1986), Ravallion (1986) criticized strongly despite its simplicity in the literature on market performance in rural areas. Basu (2006) in his study in West Bengal revealed that price signals and information are transmitted smoothly across the markets and when potato markets are spatially integrated the government may think of reducing or even withdrawing its efforts to influence the price in the market. Meena et al., (2016) observed a declining trend in arrival

of animals in majority of the cattle fairs in study area. Venkateswaran (2017) documented probable strategies in the sunflower value chain.

Objectives, Sources of Data and Research Methodology

World's most famous places in the field of lac production are located in the tribal areas of the country namely Jharkhand, Chhattisgarh, Madhya Pradesh, Odisha, West Bengal, North Eastern Hill (NEH) regions, *etc.* The present study attempts to understand the existing marketing mechanism disposal pattern of natural resins and their marketing efficiency in a agro-climatic sub zone of Central and North Eastern Plateau of India.

The purposively selected state namely Jharkhand is spread over the three agro climatic sub zones. Central and North Eastern Plateau (*Sub Zone IV*) is the largest sub zone which is spread over 14 districts. Moisture stress, acidic soils and scattered land holdings are the key features of this area (Yogi, Jaiswal & Sharma, 2017). Ranchi and Khunti districts from this zone were selected purposively based on the production of sticklac and lac processing units. Tribal and forest dweller dominated areas were selected purposively for the study. A total of 100 stakeholders including farmers (50), traders (10) and 40 officials at three lac processing units and other institutions were selected randomly.

Both the primary and secondary sources of data have been utilized for the analysis. The primary data for *kusmi* crop were collected on pre tested interview schedules through personal interview with the indentified lac growers (Mungadih village of Angara block), marketing functionaries and processors from both Ranchi and Khunti districts. In the supply chain, all the lac produced at grower's level goes to the processors where sticklac/scraped lac is processed to seedlac, shellac, button lac or other lac based value added products. During the pilot survey, it was found that unorganised sector had a vital role in disposal of scraped lac. The processors who purchased the lac from Processor A or Processor B were considered as the consumer. Major active lac marketing channels in the study area were:

- I. Producer–Small trader–Big trader–Wholesaler–Processor A – Processor B– Consumer
- II. Producer–Small trader–Wholesaler–Processor A–Processor B–Consumer
- III. Producer –Small trader –Wholesaler –Processor A –Consumer
- IV. Producer–Big trader–Wholesaler–Processor A –Processor B –Consumer
- V. Producer –Big trader –Wholesaler –Processor A –Consumer

- VI. Producer –Big trader –Processor A –Consumer
- VII. Producer–Wholesaler–Processor A –Consumer
- VIII. Producer – LAMPS – Processor A/Processor B– Consumer

In the study area eight channels were operating and in a little quantum, LAMPS were also initiated the procurement of *kusmi* lac at Minimum Support Price (MSP) as announced by Ministry of Tribal Affairs, GOI, New Delhi. Investment pattern of intermediaries, marketing cost, marketing margins and marketing efficiency were worked out for these channels. Small traders (*paikars*) were the primary purchaser of the sticklac/scraped lac from the lac producers in weekly local markets (*haats*) with a limited capacity of 100 qt/annum. Big traders were the secondary level middlemen (wholesaler) who purchase sticklac/scraped lac mainly from the small traders (*paikars*) and little quantity from the lac growers directly. Both type of the traders play a major role in time and place utility of the commodity in the supply chain. Processor-A and Processor-B were the main player to create the form utility of the commodity in the supply chain. Processor-A were engaged in seedlac preparation only while Processor-B were involved in seedlac as well as shellac and button lac also. Processor-C or Manufacturers were considered as a consumer involved in export of seedlac/shellac/button lac or high value products.

Both, tabular analysis and pictorial presentation were used to depict the findings. Estimation of total cost, gross returns and net profit of middlemen were worked out. Marketing cost of lac was worked out by applying the standard technique (Acharya & Agarwal, 2004). Cost and margins of different stages of marketing channels were assessed by applying the following formula:

$$TC_{im} = C_i + MC_i$$

$$AM_i = SP_i - (PP_i + MC_i)$$

Where,

TC_{im} = Total cost of lac marketing (in L)

C_i = Total cost borne by the lac grower in marketing of lac (in L)

MC_i = Marketing cost incurred by the i^{th} middlemen (in L)

AM_i = Absolute margin of i^{th} middlemen (in L)

SP_i = Selling price of i^{th} middlemen (in L)

PP_i = Purchase price of i^{th} middlemen (in L)

The total cost was computed as the sum total of fixed costs and variable costs. It reflects the total implicit and explicit costs incurred in the marketing of lac by the middlemen. Fixed costs were those cost, which were incurred whether or not the collection of lac was carried out or do not change with the level of lac handling. It includes interest on fixed capital and depreciation on vehicles and equipments. Variable costs as per definition vary with the level of output. These are the

second phase costs. These include costs of recurring components in lac marketing like transport, labor and miscellaneous expenses. Both monthly and annual data were used for analysis. Faminow and Laubscher (1991) compared the reduced-form price spread models to evaluate the economic factors affecting the marketing margins for agricultural products. Wohlgenant and Mullen analyzed the price spread for beef using annual data, while Thompson and Lyon modeled the price spread for oranges by using weekly data.

Price spread: The economic efficiency of marketing system is generally measured in terms of the price spread. Smaller the price spread; greater will be the efficiency of marketing system. Price spread was calculated as the difference between the price paid by the ultimate buyer (here it may be processor/manufacturer) and price received by the lac producer.

Producer's share in consumer rupee: It is the price received by the lac grower expressed as percentage of the retail price. It is calculated as

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

Where,

P_s = Lac grower's share in consumer rupee

P_f = Producer's price

P_c = Consumer/Retail price

Marketing Efficiency: Marketing efficiency was calculated by using Acharya's formula. An increase of this ratio represents improved efficiency and decrease denotes reduced efficiency.

$$MME = FP / (MC + MM)$$

Where,

MME = Modified measure of marketing efficiency

FP = Price received by the producer

MC = Marketing cost

MM = Marketing margins

Major constraints were identified by interviewing the respondents and recording their observation on well-structured schedules. The analysis of the information is qualitatively interpreted to arrive at the conclusion and recommendations.

Results and Discussions

Socio economic profile: Based on the experience in trading of lac, traders were categorized in low (5-10 years), medium (11-15 years) and higher experience category (>16 years). About 80% of total identified traders, belonged to lower and medium experience categories. Rest 20%, traders belonged to higher experience category. Most of the traders

were found from rural area with very low education status particularly in higher experience category. Family size was found higher in case of medium category of traders and overall family size was found 6.

Table-1. Top lac producing districts of the state (produced over 1,000 Mt of lac)

Sl. No.	District (States)	2012-13	Rank	2013-14	Rank	2014-15	Rank
1.	Ranchi	4250	1	3475	1	2530	1
2.	Simdega	2720	2	2445	2	1910	2
3.	Gumla	2270	3	2380	3	1330	4
4.	Khunti	-	-	1790	4	1380	3

NRG Information Cell, ICAR-IINRG, Ranchi

Disposal pattern of lac: The disposal pattern of scraped lac and high value lac products is depicted in Figure 1.

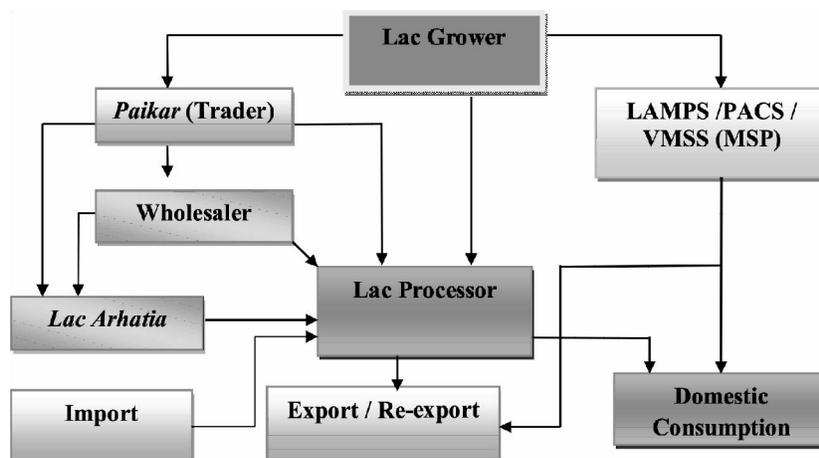


Figure 1. Disposal pattern of sticklac/scraped lac from growers to lac industry & export

Lac growers have opportunities to sell sticklac in more price through LAMPS in comparison to the local market/regional market, but they hardly comes to sell because of delay in payment. The producer farmer was found advantageous in terms of price of sticklac and alternative ways of disposing the sticklac, who are living in nearby areas equipped with lac processing units, when compared to other producer farmers, residing in remote areas. As farmers are mostly marginal, small farmers, have low income, and due to instant need of money for buying households items, payment of loan, payment for farm inputs, *etc.* Thereby, most of the farmers prefer to sells sticklac in rural market or regional market instead to processors/ LAMPS

directly. Alex and Vidyasagaran (2016) analyzed the significance of 23 NTFPs based marketing agencies to the livelihood of the indigenous communities of Attappady. Among the marketed NTFPs, nine products were exclusively marketed through the society and one product exclusively through the private shop, 10 products through society and private shops, one product marketed through the Eco Development Committee (EDC) and private shop and 2 products through all the 3 channels. Indigenous people were more benefited by the marketing through the society as the society gives certain percentage of their profit back to the primary collectors in addition to the procurement price.

Cost and Margins

Maximum procurement of sticklac from the farm gate was found in case of Channel –I (40%) followed by Channel –II (20%) and Channel –III (15%) by the small traders. Similarly, big traders were also involved in direct collection of sticklac from the farm gate. Maximum collection by the big traders was observed in Channel –IV (10%) followed by Channel –V (5%) and Channel –VI (3%). In case of Channel –VII, the wholesaler were also involved in direct collection of raw lac from the farm gate. In 2012, the LAMPS were engaged in promotional activities related to lac cultivation. Subsequently, due to market level intervention through Minimum Support Price (MSP) by central government, Jharkhand State Co-operative Lac Marketing & Procurement Federation Ltd. (JASCOLAMPF) started procurement of raw lac. Consequently, this policy decision developed a new channel for marketing of lac. The marketing cost incurred by the farmer was L490/qt and L 650/qt respectively during 2012 and 2016 where the major cost component was family labor. It is evident from the Figure 2 and Figure 3 that farmer contributes about 2% shares in total cost of lac marketing during 2012 while in 2016 it was estimated as 9%. Sarker and Das (2007) opined that the agents of Large-sized Adivasi Multipurpose Cooperative Credit Society (LAMPS) gave appropriate highest price/unit of products. The study showed that the village wholesalers serve as the most important marketing agent of sample collectors and pay the highest price to the collectors in all markets.

The highest share in total cost was incurred by Processer-A (61%) followed by Processor-B (28%) and wholesaler (7%) during 2012. Processor-A (33%) was the major contributor in the cost of lac marketing followed by Processor-B (31%), big trader (13%) and wholesaler (12%) during 2016. Thus, big traders and wholesalers were the major player in the market of raw lac and Processor-A was the major functionaries to incur the marketing and processing cost in the lac value chain. The marketing cost incurred by the small trader was L 107/qt and L 152/qt

respectively during 2012 and 2016. Here, the major cost incurred as the labor expenses for loading/ unloading and transportation. Previous findings by Sarker and Das (2007) also revealed that as to the marketing cost of NTFPs is concerned, the labour cost is the most important component of marketing costs among all cost components followed by packaging and transport costs. Small trader contributes about 0.3% shares in total cost of lac marketing during 2012 while in 2016 it was estimated as 2%. Similarly, cost incurred by the big trader was L 694/qt and L 968/qt respectively during 2012 and 2016. Cost incurred for storage and losses due to moisture was the major expense for the big trader. Major portion of the arrivals in the market were channelized through *Arhatia* and they take over the physical handling of the produce, arrange for its sale, collects the price from buyer, deducts their expenses and commission before remittance to the seller.

Wholesaler incurred L 2358/qt and L 932/qt respectively as marketing cost during 2012 and 2016. Main cost component was found *Arhat* (about 30-70%) which is charged at the rate of 2-3% of the amount transacted. Further, the raw lac moves to the factory for processing and processor-A incurred high marketing and value addition cost (L 19614/qt) during 2012 as compared to 2016 (L 2417/qt). Marketing and value addition cost incurred by Processor-B were estimated as L 9037/qt and L 2292/qt during 2012 and 2016 respectively. For both, value addition was the major cost component in the lac value chain. Wohlgenant (2014) applied neoclassical economics to yield predictions consistent with empirical industrial organization models regarding market middlemen behavior. An application to US farm-to-retail price spread time series data shows the consistency of the predictions. Piya, Maharjan, Joshi & Dangol (2011) showed that collection and marketing of NTFPs is not an attractive source of income especially for those relatively better-off Chepang households as the current price offered for the NTFPs collected by the community is very nominal (that do not even cover the labour costs involved). Praja Cooperative Limited (PCL), a Chepang community based institution, is struggling to provide better prices for Chepangs. They suggested that empowerment of PCL can contribute to improve the bargaining power of Chepang community in NTFPs trade.

Composition of marketing cost across various market functionaries are depicted in Figure 4 and Figure 5. Price received by the lac growers ranged from L 58000.0/qt in Channel-I to L 59000.0/qt in Channel-VII during 2012 and this constitutes about 48% to 68% of consumer price. Similarly in 2016, the price received by the lac growers ranged from L 9000.0/qt in Channel-I to L 32000.0/qt in Channel-VIII and this constitutes about 53% to about more than double of consumer

price. Temporal analysis indicated that total marketing costs and margin was lowest in Channel-V (L 28990) followed by Channel-VI (L 30490) and Channel-III (L 30990) during 2012 as wholesaler was not involved.

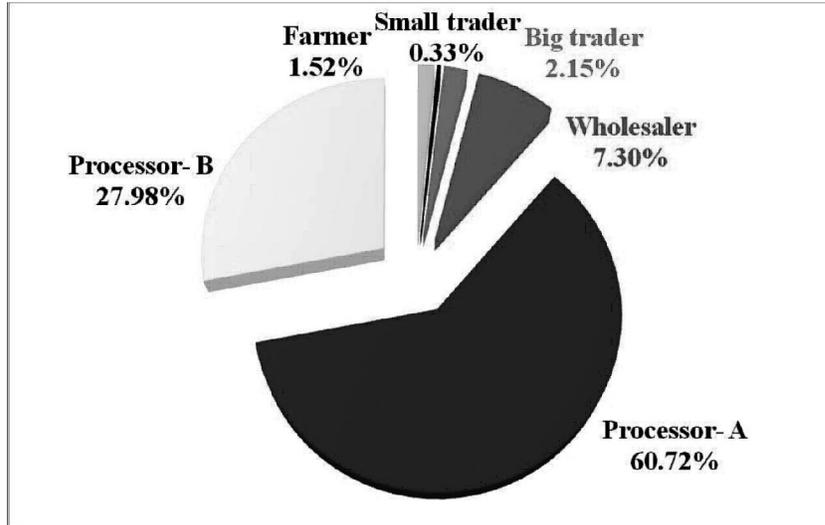


Figure 2. Share of different lac market functionalities in marketing cost during 2012

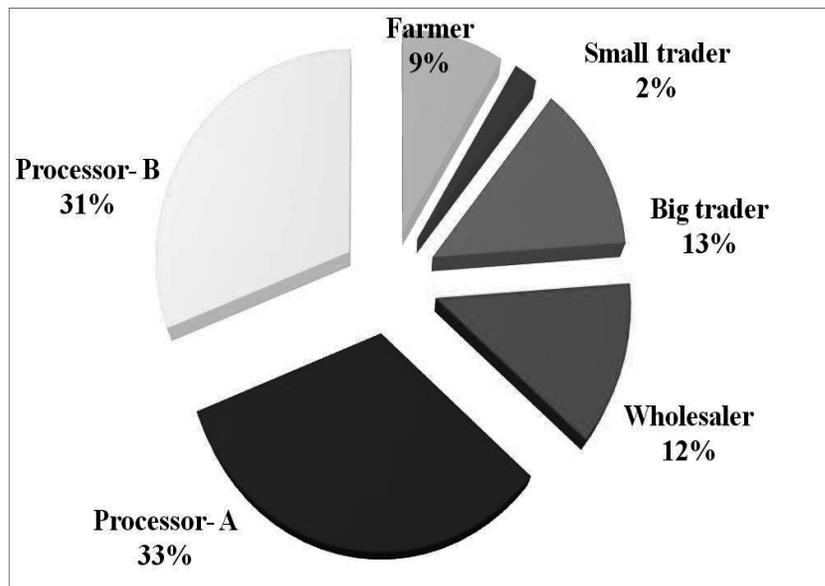


Figure 3. Share of different lac market functionalities in marketing cost during 2016

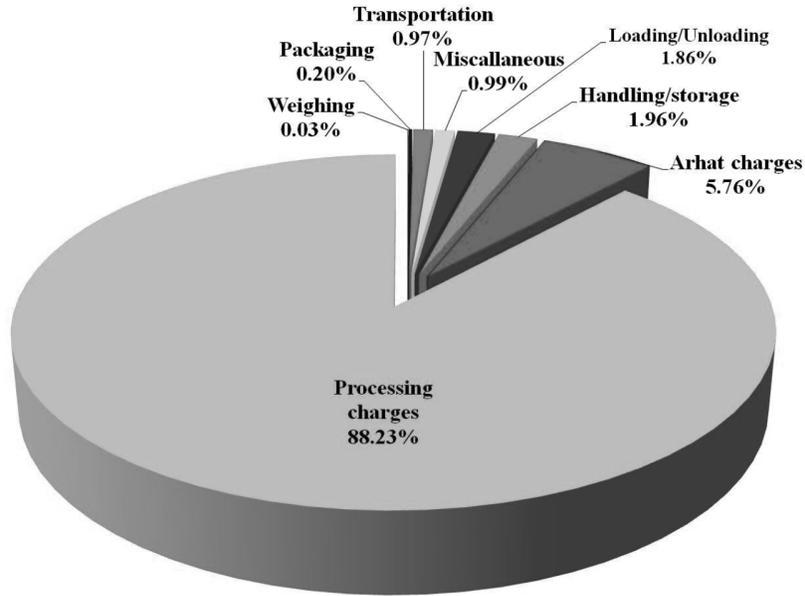


Figure 4. Break up of marketing cost incurred by the market functionaries during 2012

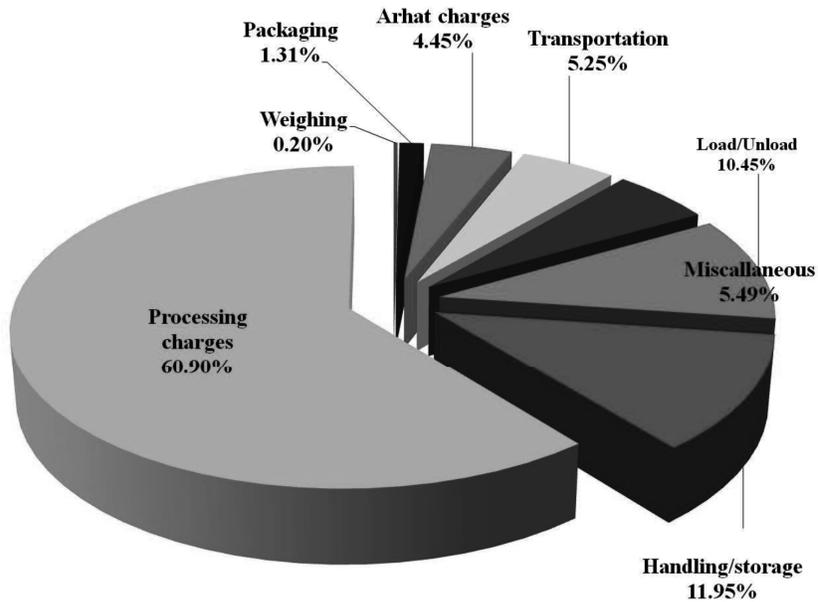


Figure 5. Break up of marketing cost incurred by market functionaries during 2016

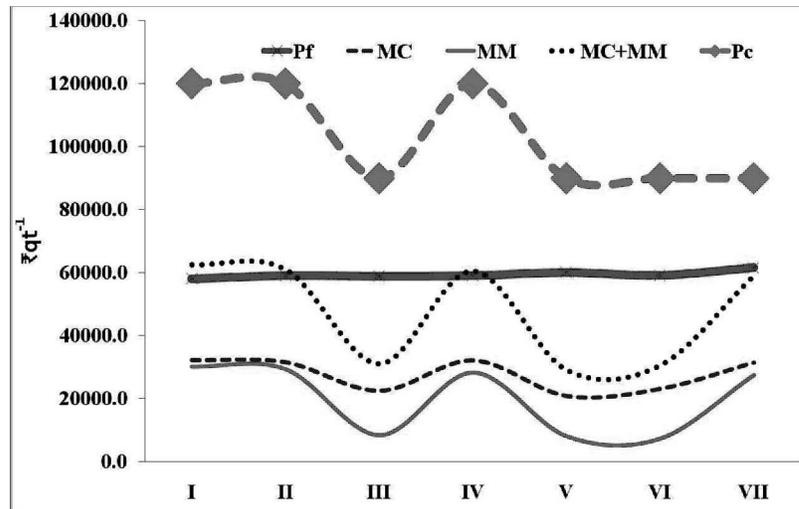


Figure 6. Price spread across the various lac marketing channels during 2012

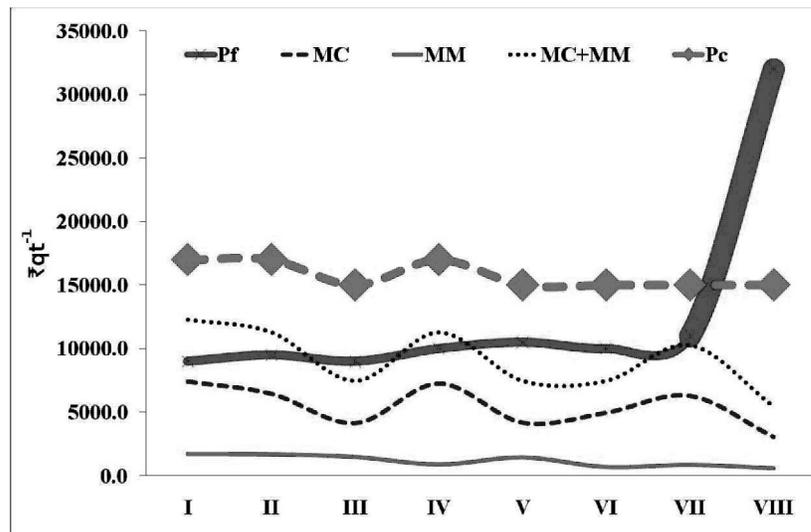


Figure 7. Price spread across the various lac marketing channels during 2016

Although during 2016, total marketing costs and margin was lowest in Channel-VII (among the unorganized sector) as the cost of wholesaler declined significantly due to decline of transacted amount at *Arhatia* level. Moreover, market intervention by the government

created new channel (Channel-VIII) to encourage the lac growers by procurement of raw lac at remunerative prices. LAMPS through its village network of Primary Lac Cooperative Societies initiated the procurement at MSP. In Channel-VIII, the price received by the lac growers was L 32000.0/qt and this was found almost double of the prevailing market price of scraped lac. Studies conducted by various researchers in Punjab revealed that producer's sale price of green peas constitutes about 70 to 75% of the consumer's purchase price (Sidhu, Sidhu & Singh, 2011; Singh, Sharma & Singh, 2015). Lac growers who sold the raw lac under the procurement by the government at MSP, fetched more than double of the prevailing market price. It has been also indicated that dynamic models improve upon traditional static models by capturing intertemporal supply and prices effects. Efficiency gains of the estimates are also observed. Pal and Patel (2013) conducted a study in Chhattisgarh and found that lac grower receives 86 % share in consumer's price of their produce while margin of primary purchaser and wholesaler was only 3% and 2 % respectively. The marketing cost and net margin of various functionaries of lac market are illustrated in Figure 6 and Figure 7.

The measure of marketing efficiency also indicates inefficiency. In the absence of any formal marketing system for raw/semi-processed lac, the lac growers are forced to sell it unduly lower price and the middlemen get high market margins. Marketing efficiency across various lac marketing channels is depicted in the Table 2. Marketing efficiency ranged from 0.93 in Channel-I to 2.07 in Channel-V during 2012. Similarly in 2016, marketing efficiency ranged from 0.98 in Channel-I to 8.77 in Channel-VIII. Temporal analysis indicated that marketing efficiency was highest in Channel-V (2.07) followed by Channel-VI (1.94) and Channel-III (1.90) during 2012 as Processor B were not involved.

Although during 2016, marketing efficiency was highest in Channel-VIII (8.77) followed by Channel-VII (1.94) and Channel-V (1.86) as the middlemen declined significantly. Yamano and Arai (2016) examined the integration of agricultural sectors with local markets in Kenya and Uganda. In both countries, the price spread increases by 2% points for each additional driving hour away from the nearest maize market. Finding suggests that reductions in the transportation costs will increase the farmer prices. Moreover, studies conducted by Klasra (2006) and Yogi, Chauhan and Sharma (2007) suggested that market reforms reduced the spatial price spread and there is a need to strengthen the structure of organized marketing system to save the producers from the clutches of intermediaries.

Table-2. Temporal comparison of marketing efficiency of various marketing channels

Particulars	Farm gate price (L /qt)		Total marketing costs and margin (L /qt)		Marketing Efficiency	
	2012	2016	2012	2016	2012	2016
Channel-I	58000.0	9000.0	62490.0	9150.0	0.93	0.98
Channel-II	59000.0	9500.0	60990.0	8150.0	0.97	1.17
Channel-III	58800.0	9000.0	30990.0	5650.0	1.90	1.59
Channel-IV	59000.0	10000.0	60490.0	8150.0	0.98	1.23
Channel-V	60000.0	10500.0	28990.0	5650.0	2.07	1.86
Channel-VI	59100.0	10000.0	30490.0	5650.0	1.94	1.77
Channel-VII	59000.0	10000.0	35490.0	5150.0	1.66	1.94
Channel-VIII	00000.0	32000.0	00000.0	3650.0	0.00	8.77

Constraints Analysis

A variety of constraints are associated with the marketing of lac. As the lac growers sell lac in small quantities and due to cash need, they sell the produce even at very low price. Mostly, produce is sold without any grading or value addition. Major constraint in small trader was lack of finance where as in case of big trader and wholesaler major constraint was uneven demand of raw lac and price volatility. These market functionaries also face other constraints like lac of support services like storage facility, transport and local disturbances resulting in low market efficiency. Similarly, processors also face similar hurdles in response as they depend on market functionaries for raw material of the lac industry. Fear of impurities, unavailability of raw materials on time, power supply, local disturbance and competition at overseas market were the major issues of processors. Jaiswal, Sharma and Kumar (2003) found that mortality of lac crop during fog, shortage of broodlac, low farm gate price of scrapedlac and lack of technical know-how were the major problems faced by the lac cultivators. Prakash (2003) reported that collection of MFPs in small quantity by traditional methods, marketing in raw form without grading, lack of information about price and poor marketing infrastructure including transport, storage and value addition are the major bottlenecks which hinder in efficient marketing of these produces. Alex and Vidyasagan (2016) observed that the financial constraints during the lean seasons are forcing the indigenous communities to sell their products to the private shops.

Policy Implications

It is evident from the similar findings of previous studies that bottleneck in lac marketing needs to be removed through policy interventions. Analysis indicated that lac growers received remunerative price for

their farm produce and their share in consumer rupee ranged from 50-70% in channels of unorganized sector while it crossed the limits of 100% in organized channel. The study revealed that there is tremendous scope to increase the profitability of lac growers by promoting organized market sector through group marketing, cooperative marketing and establishment of small scale processing units in the lac production catchments. Analysis implied that marketing efficiency was highest in Channel-VII (8.77) followed by Channel-VII (1.94) and Channel-V (1.86) as the middlemen declined significantly due to direct procurement at MSP. It benefitted producers, but market functionaries and processing firms were not fully satisfied. Consequently, trading activities affected adversely and market price could not revive in short run. However, it improved over the period. Findings of previous studies also emphasized on market intelligence and information support (Brorsen, Chavas, Grant & Schnake, 1985), encouraging local village traders through Cooperative Corporations (Naidu, Ravi Kumar & Murthy, 2003), support from research institutes and the government to harness the sustainable extraction and further processing of NTFPs (Chidebere-Mark, Ejike & Akwivu, 2016) and starting value addition units of the NTFPs through involvement of indigenous communities (Alex & Vidyasagan, 2016). Pal, Bhagat and Bhattacharya (2009) also observed that there is a tremendous scope to strengthen of market based extension network and promotion of quality consciousness amongst farmers, traders and manufacturers of lac. Unless natural product markets are spatially integrated, growers and ultimate users will not realize the gain from policy interventions. Integration of markets helps in transmission of the correct price signals through the marketing channels and growers can be able to specialize according to long-term comparative advantage and the gains from trade may be realized. The lac producers may also be encouraged through awareness campaigns to sell their produce at MSP. They may also be encouraged to use websites /smart phones for getting information about the prevailing market prices and MSP announced by the government. In contrast, Klasra (2006) advocated private sector in Pakistan and suggested to limit the extent of government intervention in the trading activity. He assumed that correct price signals can be transmitted down to the marketing channel and can guide the farmers to specialize according to their comparative advantages.

Conclusions

Unorganized collection of best quality *kusmi lac* from remote tribal areas has been resulting not only in lower price realization by the lac growers, but also in dilution of the interest of youths about lac cultivation activities. Opportunities of employment for migrating tribal

youths will be affected adversely. Migration of the villagers are found age between 15 years to 45 years either for higher education or in search of employment in other towns or cities. High margins by the middlemen reduce the income of the farmers. Hence, there is need to promote and strengthen the organized lac market in the lac producing areas. To streamline the procurement activities at local level, the *lac growers* may be encouraged to form Self Help Groups (SHGs) or Joint Liability Groups (JLGs) for financial inclusion of weaker sections and resource poor farmers. These groups or associations would be better placed to organize the procurement and marketing of this very important natural product in a sustainable manner. The processors from different industrial centers of the country may directly source raw /semi processed materials from these groups or associations/ federations. Market intelligence and extension service should be improved for dissemination of current prices of lac.

REFERENCES

- Acharya, S.S., & Agarwal, N.L. (2004). *Agricultural marketing in India* (IV edition). New Delhi: Oxford and IBH Publishing Co..
- Alex, A., & Vidyasagan, K. (2016). The marketing of non-timber forest products in the western ghats region of Attappady, Kerala. *Economic Affairs*, 61(3): 355-363. Retrieved from <http://ndpublisher.in/admin/issues/EAV61N3a.pdf>
- Alexander, C., & Wyeth, J. (1994). Cointegration and market integration: An application to the Indonesian rice market. *Journal of Development Studies*, 30(2), 303-332.
- Basu, J. P. (2006, August 12-18). Cointegration and market integration: An application to the potato markets in rural West Bengal, India. International Association of Agricultural Economists Conference at Gold Coast, Australia. Retrieved from <https://ageconsearch.umn.edu/bitstream/25705/1/pp060185.pdf>
- Behura, D., & Pradhan, D.C. (1998). Cointegration and Market Integration: An application to the marine fish markets in Orissa. *Indian Journal of Agricultural Economics*, 53(3) 344-350.
- Brorsen, B. W., Chavas, J., Grant, W. R., & Schnake, L. D. (1985). Marketing margins and price uncertainty: The case of the U.S. wheat market. *American Journal of Agricultural Economics*, 67(3), 521-528. Retrieved from http://www.jstor.org/stable/1241071?seq=1#page_scan_tab_contents
- Chidebere-Mark, N.M., Ejike, R.D., & Akwiwu, U. N. (2016). Economics of non-timber forest products (NTFPs) marketing in Ikwuano local government area, Abia state, Nigeria. *European Journal of Agriculture and Forestry Research*, 4(2), 1-8. Retrieved from <http://www.eajournals.org/wp-content/uploads/Economics-of-Non-Timber-Forest-Products-Ntfps-Marketing-In-Ikwuano-Local-Government-Area-Abia-State-Nigeria1.pdf>
- Chopra, K. (1993). The value of non-timber forest products: An estimation for tropical deciduous forests in India. *Economic Botany*, 47: 251-257.
- Faminow, M. D., & Laubscher, J.M. (1991). Empirical testing of alternative price spread models in the southern African Maize Market. *Journal of Agricultural Economics*, 6(1), 49-66. Retrieved from <http://ageconsearch.umn.edu/bitstream/172801/2/agec1991-1992v006i001a004.pdf>

- Gauraha, A. K. (1992). Micro-economic analysis of a tribal village. *Indian Journal of Agricultural Economics*, 47(3), 446-447.
- Heytens, P.J. (1986). Testing market integration. *Food Research Institute Studies*, XX(1), 25-41.
- Jaiswal, A.K., Sharma, K.K., & Kumar, K.K. (2003). Problems of lac growers in Jharkhand state. *Journal of Non-Timber Forest Product*, 10(1&2), 46-50.
- Klasra, M. A. (2006). Market reforms, spatial price spread and market connectedness: Evidence from wheat markets in Pakistan. *Journal of Applied Sciences*, 6(4), 816-820.
- Kumar, S., & Kumar, P. (2017). Promoting human behaviour for environmental sustainability: An urgent need for homeostasis of the society. *Delhi Psychiatry Journal*, 20(1), 18-22.
- Lal, R (2011). Recent advancement in lac culture. Indian Institute of Natural Resins and Gums, Ranchi, Jharkhand, 7.1, 263-279.
- Lele, U.J. (1967). Market integration: A study of sorghum prices in western India. *Journal of Farm Economics*, 49, 14-59.
- Lele, U.J. (1971). *Food grain marketing in India private performance and public policy*. Ithaca, NY : Cornell University Press.
- Maithani, G. P. (1994). Management perspectives of minor forest produce. *MFP News*, Dehradun.
- Mallik, R. H. (2000). Sustainable management of non-timber forest products in Orissa: Some issues and options. *Indian Journal of Agricultural Economics*, 55(3), 384-397.
- Meena, G.L., Burark, S.S., Jangid, M. K., Chand, P., Yogi, R. K., & Shekhawat, R.S. (2016). Marketing of milk products and animals in Rajasthan. *Indian Journal of Agricultural Marketing*, 30(3):136-136 .
- Naidu, M.R., Ravi Kumar, K.M., & Murthy, P.S.S. (2003). Temporal variation in the marketing of minor forest in tribal areas of Andhra Pradesh-Case study. *Indian J Agricultural Marketing*, 17(3), 39-49.
- Pal, G., & Patel, B. (2013). An economic analysis of lac marketing in Kanker district of Chhattisgarh. *Indian Forester*, 139(3), 256-259.
- Pal, G., Bhagat, M.L., & Bhattacharya, A. (2009). An analysis of price spread in marketing of lac in Madhya Pradesh. *Indian Journal of Forestry*, 32(4), 581-584.
- Palaskas, T .B., & Harriss- White, B. (1993). Testing market integration: New approaches with case material from the West Bengal food economy. *The Journal of Development Studies*, 1(10), 1-57.
- Piya, L., Maharjan, K.L., Joshi, N.P., & Dangol, D.R. (2011). Collection and marketing of non-timber forest products by Chepang community in Nepal. *The Journal of Agriculture and Environment*, 12, 10-21. doi:10.3126/aej.v12i0.7558.
- Prakash, B. (2003). Marketing of minor forest produce in India: Trends, constraints and prospectus. *Indian J Agricultural Marketing*, 17(3), 28-38.
- Prasad, K.M. (2011). Recent advancement in lac culture, technology of lac processing. Indian Institute of Natural Resins and Gums, Ranchi, Jharkhand. 6.3, 237-239.
- Ramasamy, C. (2016) Agricultural marketing in India: Select issues and recent developments. *Indian Journal of Agricultural Marketing*, 30(3), 5-25.
- Rao, G. N. (1987). Significance of minor forest produce in tribal economy: A case study. *Kurukshetra*, 7, 23-28.
- Ravallion, M. (1986). Testing market integration. *American Journal of Agricultural Economics*, 68(1), 102-109.
- Sarker, D., & Das, N. (2007). Efficiency of market behavior of non-timber forest products for households under joint forest management programme (JFMP): A case study in West Bengal. *Indian Journal of Agricultural Economics*, 62(1), 80-97.

- Sidhu, R.S., Sidhu, M., & Singh, J.M. (2011). Marketing efficiency of green peas under different supply channels in Punjab. *Agril. Econ. Res. Review*, 24, 267-273.
- Singh, A.K., Singh, J.P., Yogi, R.K., Jaiswal A.K. & Singh A. (2015). Impact of lac cultivation on economic strengthening of tribal women. *International Journal of Tropical Agriculture*, 33(1), 1027-1032.
- Singh, G., Sharma, V.K., & Singh, S. (2015). Production and marketing of green peas in Punjab. *Indian J Agricultural Marketing*, 29(1), 71-80. Retrieved from http://agrilmktg.org/wp-content/uploads/2015/07/IJAM-29-1-Text_Pgs_-final-PDF.pdf
- Thakur, D.S. (1974). Food Grain Marketing Efficiency: A Case Study of Gujarat. *Indian journal of Agricultural Economics*, 29(4), 61-74.
- Venkateswaran, K. (2017). Value chain of sunflower-A case study in Raichur district of Karnataka. *Indian Journal of Agricultural Marketing*, 31(2), 52-62.
- Wohlgenant, M. K. (2014). Market middlemen and determinants of the price spread under competition. *Theoretical Economics Letters*, 04(09), 834-838.
- Yamano, T., & Arai, A. (Eds.). (2016). The maize farm-market price spread in Kenya and Uganda. *Emerging Development of Agriculture in East Africa*, 23-38.
- Yogi, R.K., Chauhan, A.K., & Sharma, S.P. (2007). Economics of milk marketing in Jaipur district of Rajasthan. *Indian Journal of Dairy Science*, 60(4), 307-312.
- Yogi, R.K., Jaiswal, A.K., & Sharma, K.K. (2017). Enabling rural households of Chotanagpur plateau region of Jharkhand for doubling farm income. *Jharkhand Journal of Development and Management Studies*, 15(1), 7179-7195.
- Yogi, R.K., Kumar, A., & Jaiswal, A.K. (2017). Lac, plant resins and gums statistics 2015: At a glance. ICAR-Indian Institute of Natural Resins and Gums, Ranchi (Jharkhand), India. Bulletin (Technical) No. 17/2017, 01-72.